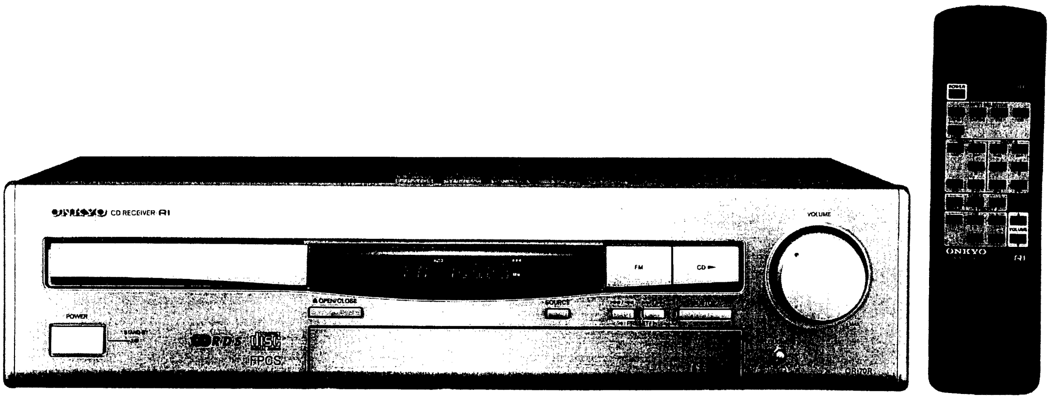
REF. NO. 3521

ONKYO® SERVICE MANUAL

COMPACT DISC RECEIVER

MODEL CR-70R



Black and Silver models

UP	230V AC, 50Hz
UW	120/220V AC, 60/50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

AMP SECTION

Power Output:	2 × 50 watts at 4 ohms 1 kHz DIN 2 × 37 watts at 8 ohms 1 kHz DIN
Continous Power output:	30 watts per channel min. RMS. at 8 ohms both channels driven from 20 Hz to 20kHz with no more than 0.08% THD.
Dynamic Power:	2 × 84 watts at 2 ohms 2 × 73 watts at 3 ohms 2 × 67 watts at 4 ohms 2 × 43 watts at 8 ohms
Total Harmonic Distortion:	0.08 % at Rated Power
IM Distortion:	0.08 % at Rated Power
Damping Factor:	50 at 8 ohms
Sensitivity and Impedance:	TAPE-1, 2 LINE PLAY: 150mV, 50kohms TAPE-1. 2 REC: 150mV, 2.2kohms
Frequency Response:	20 to 30,000 Hz : ±1 dB
Tone Control:	BASS : ± 10 dB at 100 Hz TREBLE : ± 10 dB at 10,000 Hz LOUDNESS:+7dB at 70Hz +5dB at 10kHz
Single to Noise Ratio:	LINE/TAPE:100 dB (IHF A)
Muting:	– ∞ dB

CD SECTION

Signal readout system:	Optical non–contact
Reading rotation:	About 500 – 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 – 1.4 m / s
Error correction system:	Cross Interleave Read Solomon code
D / A converter:	1 bit
Digital filter:	352.8 kHz 8 times over sampling
Number of channels:	2 (stereo)
Frequency response:	5 Hz – 20 kHz

FM Tuner section

Tuning Range:	87.50 to 108,00 MHz (50 kHz steps)
Usable Sensitivity:	Mono 12.4 dBf, 1.2 μV (75 ohms IHF) 1.2 μV (75 ohms DIN) Stereo 19.2 dBf,2.5μV (75 ohms IHF) 25.0μV (75ohms DIN)
50 dB Quieting:	Mono 18.2 dBf, 2.2μV (75 ohms)
Sensivity:	Stereo 38.2 dBf, 22.0 μV (75 ohms)
Capture Ratio:	1.5 dB
Image Rejection Ratio:	85 dB
IF Rejection Ratio:	90 dB
Signal-to-Noise Ratio:	Mono 73 dB, IHF Stereo 67 dB, IHF
Selectivity:	50 dB DIN (+ / – 300 kHz at 40 kHz Devi.)
AM Suppression Ratio:	50dB
Harmonic Distortion:	Mono 0.25 % Stereo 0.50 %
Frequency Response:	30 to 15,000 Hz (+ / – 1.5 dB)
Stereo Separation:	40 dB at 1.000 Hz 30 dB at 100 to 10,000 Hz
Stereo Threshold:	17.2 dBf, 2.0 μV (75 ohms)

General

Power supply:	European model : AC 230V, 50Hz Worldwide model: AC 120V/220V switchable, 50/60Hz
Dimensions (W×H×D) :	455 × 110 × 330 mm (17-15/16" × 4-5/10" × 13")
Weight:	7.8 kg (17.2 lbs)

Specifications and features are subject to change without notice.

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated. During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties

- Material: GaAlAs
- Wavelength: 760 ~ 800 nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABELS

The label shown below are affixed.

1. **Warning lable**

   This label is located on the chassis.

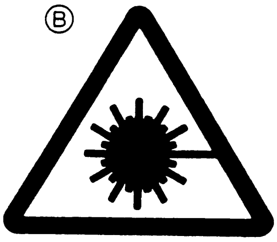
Ⓐ

DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.

ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L ECLENCHEMENT DE SECURITE ANNULE.

Ⓑ



Ⓒ

VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN.

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTTIINA NÄKYMÄTTÖMÄLLE
LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVARSEL: USYNLIG LASERSTRÅLING
VED ÅBNING, NÅR SIKKERHEDSAF-
BRYDER ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL
ÅPNES OG SIKKERHEDSLÅS BRYTES.
UNNGÅ EKSPONERING FOR STRÅLEN.

Ⓐ : Danger label
Ⓒ : Only 230V model

2. **Class 1 label**

   This label is located on the rear panel.

"CLASS 1 LASER PRODUCT"

LUOKAN 1
LASERLAITE

KLASS 1
LASER APPARAT

ADVARSEL

Denna maekning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

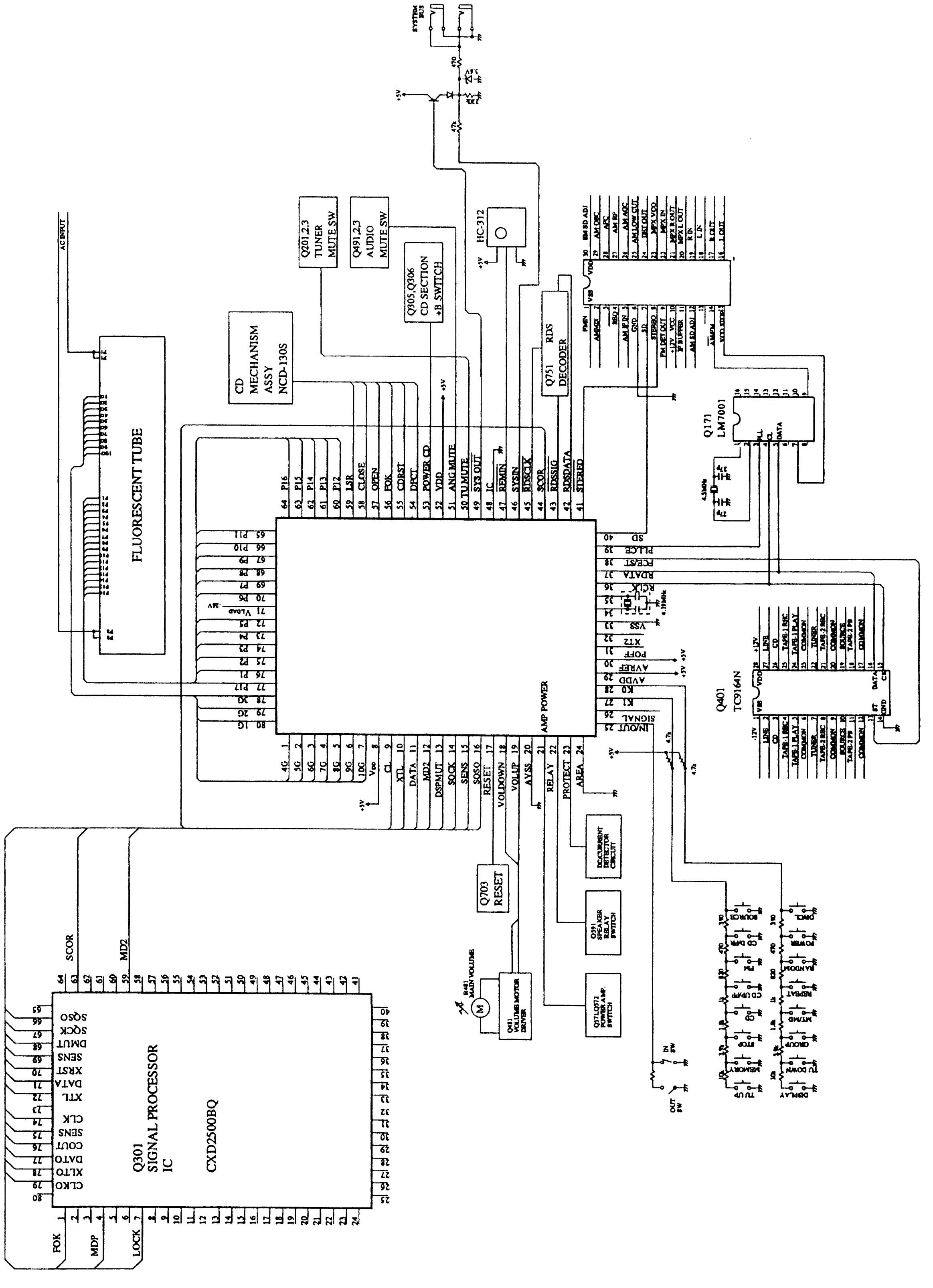
APPARATET BØ/R KUN ÅBNES AF FAGFOLK MED SE RLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLERI

Indvendigt i apparatet er anbragt den her gengivne advarselsmérkning, som advarer imod at foretage sådnne indgreb i apparatet, at man kan komme til at udsaette sig for laserstråling.

VAROITUS! LAITTEEN KAYTTAMINEN MUULLA KUIN TASSA KAYTTOOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KAYTTAJAN TURVALLISUUSLUOKAN 1 YLITTAVALLE NAKYMATTOMALLE LASERSATEILYLLE.

MICROPROCESSOR CONNECTION DIAGRAM

μPD78044AGF-123


FLUORESCENT TUBE
AC INPUT
CD MECHANISM ASSY NCD-130S
Q201,2,3 TUNER MUTE SW
Q491,2,3 AUDIO MUTE SW
Q305,Q306 CD SECTION +B SWITCH
HC-312
SYSTEM BUS
Q751 RDS DECODER
Q171 LM7001
Q401 TC9164N
Q703 RESET
Q481 VOLUME MOTOR DRIVER
M481 MAIN VOLUME
Q571,Q572 POWER AMP. SWITCH
Q591 SPEAKER RELAY SWITCH
DC/CURRENT DETECTOR CIRCUIT
AMP POWER
IN SW
OUT SW
Q301 SIGNAL PROCESSOR IC
CXD2500BQ
SCOR
MD2
FOK
MDP
LOCK
SQSO
SQCK
DMUT
SENS
XRST
DATA
XTL
CLK
COUT
DATO
XLTO
CLKO
P16
P15
P14
P13
P12
LSR
CLOSE
OPEN
FOK
CDRST
DFCT
POWER CD
VDD
ANG MUTE
TU MUTE
SYS OUT
IC
REMIN
SYSIN
RDSCLK
SCOR
RDSSIG
RDSDATA
STEREO
SD
PLLCE
FCE/ST
RDATA
RCLK
VSS
XT2
POFF
AVREF
AVDD
K0
K1
SIGNAL
IN/OUT
AREA
PROTECT
RELAY
AVSS
VOLUP
VOLDOWN
RESET
SQSO
SENS
SQCK
DSPMUT
MD2
DATA
XTL
CL
VDD
10G
9G
8G
7G
6G
5G
4G
1G
2G
3G
P17
P1
P2
P3
P4
P5
P6
VLOAD
P7
P8
P9
P10
P11
4.19MHz
4.5MHz
+5V
-24V
+12V
-12V
TU UP
MEMORY
STOP
CD
CD UP/FF
FM
CD DN/FR
SOURCE
TU DOWN
GROUP
MT/MD
REPEAT
RANDOM
POWER
DISPLAY
DMCL

TERMINAL DESCRIPTIONS

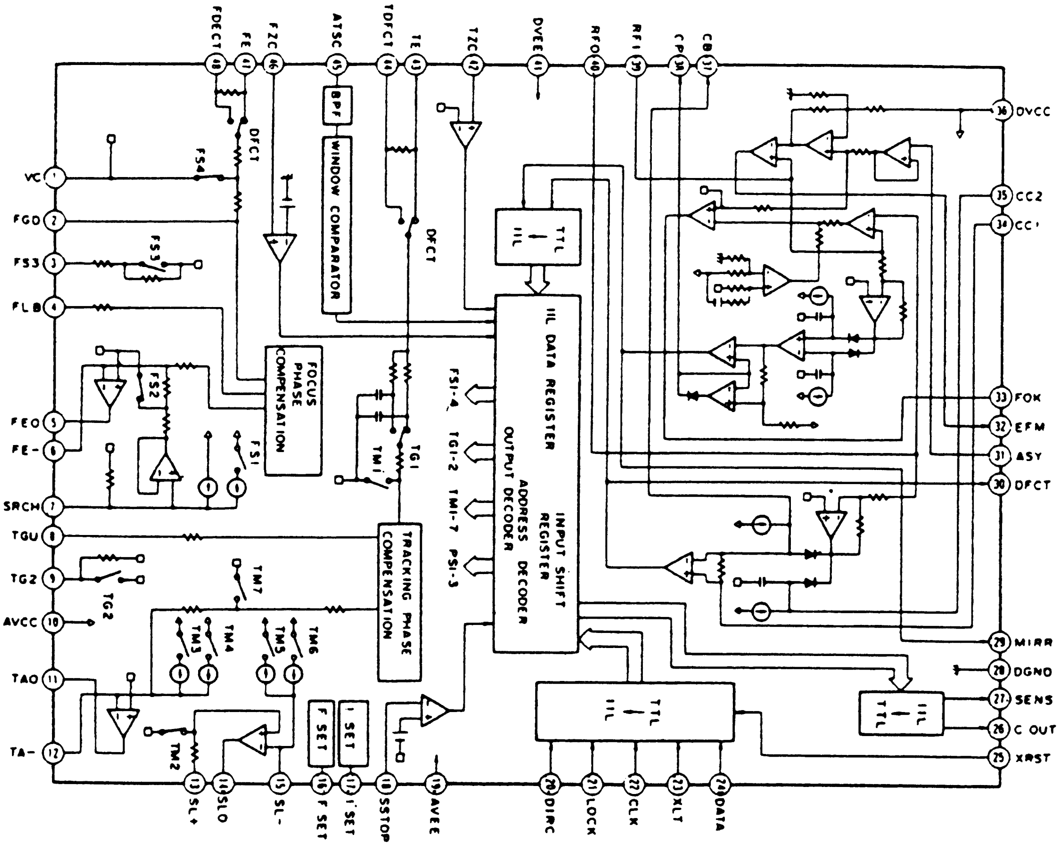
Pin No.	Function	Description
1~7	4G~10G	Grid output terminals.
8	VDD	Power supply terminal.
9	CDCLK	Clock output terminal. Connect the terminal CLOCK of signal processor IC.
10	XTL	Latch output terminal. Connect the terminal XLAT of signal processor IC.
11	CDDATA	Data output terminal. Connect the terminal DATA of signal processor IC.
12	MD2	Digital output control output terminal. Not used.
13	DSPMUT	Digital muting output terminal. Connect the terminal MUTE of signal processor IC.
14	SQCK	Clock output terminal for SQCK. Connect the terminal SQCK of signal processor IC.
15	SENS	Sense signal input terminal. Connect the terminal SENS of signal processor IC.
16	SQSO	Data input terminal from SQSO. Connect the terminal SQSO of signal processor IC.
17	RESET	System reset input terminal.
18	VOL DOWN	Volume control output terminals.
19	VOL UP	Refer the table 1.
20	AVSS	Ground terminal for D/A converter.
21	AMP POWER	Power amplifier switching signal output terminal.
22	RELAY	Speaker relay control output terminal.
23	PROTECT	Detection input terminal for protection circuit.
24	AREA	Initializing setting terminal for the Frequency range.
25	IN/OUT	Input terminal for tray open/close detection switches.
26	SIGNAL	Signal level input terminal for automatic memory.
27	K1	Operation key connection terminals.
28	K0	
29	AVDD	Analog power supply for D/A converter.
30	AVREF	Reference power supply for D/A converter.
31	POFF	Power stoppage detection terminal.
32	XT2	Crystal resonator connection terminal for sub system.
33	VSS	Ground terminal.
34	X1	Crystal resonator connection terminal for main system.
35	X2	Connect the 4.19MHz crystal resonator.
36	RCLK	Clock output terminal for PLL IC and the source selector IC.
37	RDATA	Data output terminal for PLL IC and the source selector IC.
38	FCE/ST	Strobe output terminal for the source selector IC and electric volume.
39	PLLCE	Chip enable terminal for PLL IC.
40	SD	Broadcast detection input terminal. L when received the broadcast more than muting level.
41	STEREO	Stereo broadcast detection input terminal. L when STEREO.
42	RDSDATA	Data input terminal from RDS decoder.
43	RDSSIG	RDS broadcast detection terminal.
44	SCOR	Sub code detection terminal. Connect the terminal SCOR of signal processor IC.
45	RDSSCK	Clock input terminal from RDS decoder.
46	SYSIN	System code input terminal.
47	REMIN	Remote control signal input terminal.
48	IC	Connect the ground terminal.
49	SYSOUT	System code output terminal.
50	TU MUTE	Muting output terminal for tuner section.
51	ANGMUT	Analog muting output terminal.
52	VDD	Positive power supply terminal.
53	CD POWER	Power supply terminal for CD mechanism.
54	DEFECT	Defect output pin for CD mechanism.
55	CD RESET	Reset output terminal for CD mechanism.
56	FOK	FOK input terminal from CD mechanism.
57	OPEN	CD tray open control output terminal.
58	CLOSE	CD tray close control output terminal.
59	LSR	Optical pickup control output terminal.
71	VLOAD	Pull-down resistor connection terminal for FL tube controller.
60~70	P12~P6	Segment output terminals.
72~77	P5~P1,P17	Segment output terminals.
78~80	1G~3G	Grid output terminals.

Operation	VOLUP output	VOLDOWN output
Stop	H	H
VOL UP	H	L
VOL DOWN	L	H

Table 1

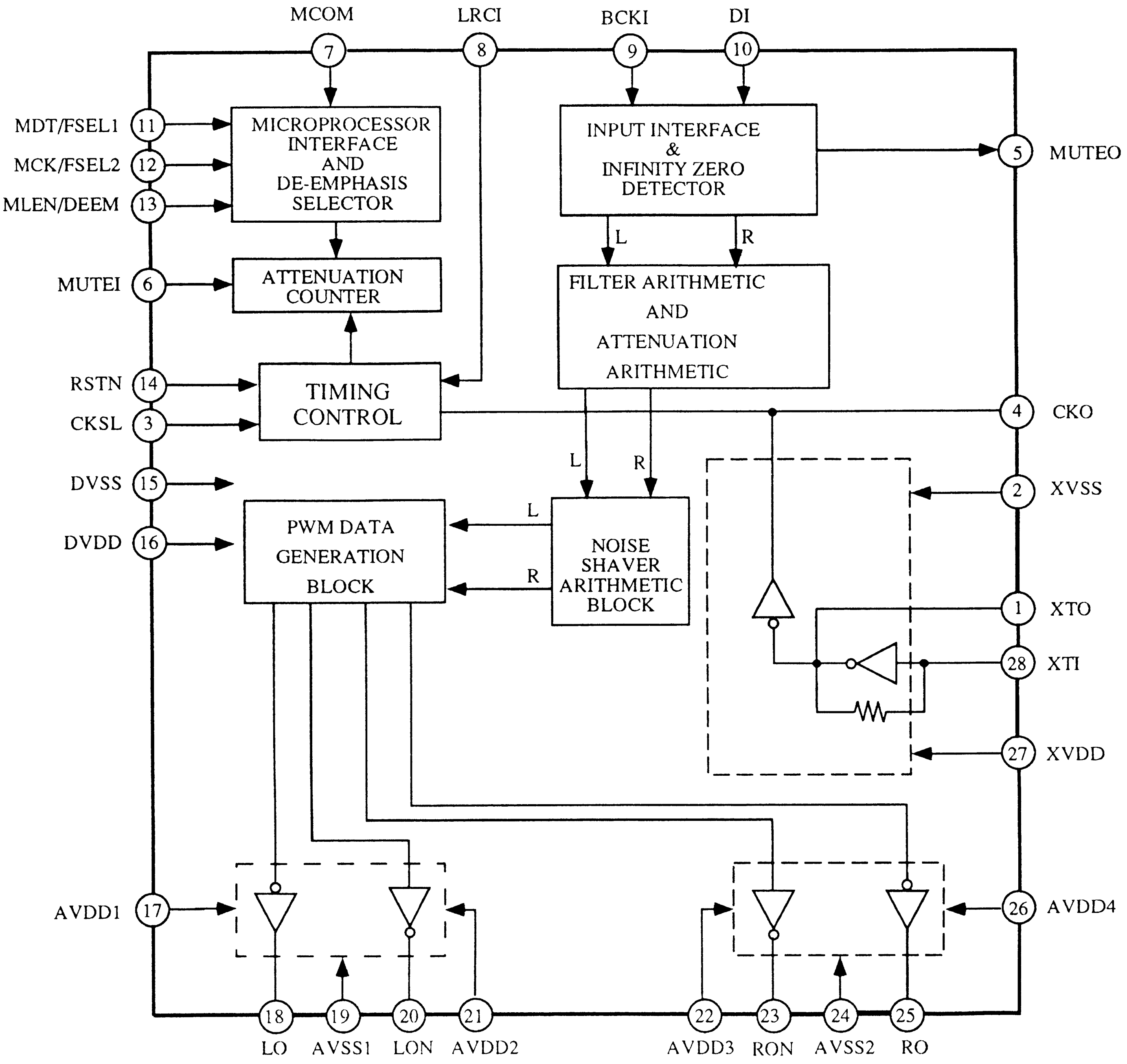
IC BLOCK DIAGRAM AND DESCRIPTIONS

CXA1372Q (Servo Signal Processor)


FDFCT 48
FE 47
FZC 46
ATSC 45
TDFCT 44
TE 43
TZC 42
DVEE 41
RFO 40
RFI 39
CP 38
CB 37
36 DVCC
35 CC2
34 CC1
33 FOK
32 EFM
31 ASY
30 DFCT
29 MIRR
28 DGND
27 SENS
26 C OUT
25 XRST
VC 1
FGD 2
FS3 3
FLB 4
FEO 5
FE- 6
SRCH 7
TGU 8
TG2 9
AVCC 10
TAO 11
TA- 12
13 SL+
14 SLO
15 SL-
16 F SET
17 I SET
18 SSTOP
19 AVEE
20 DIRC
21 LOCK
22 CLK
23 XLT
24 DATA
BPF
WINDOW COMPARATOR
DFCT
FS4
FS3
FOCUS PHASE COMPENSATION
FS2
FS1
TTL
IIL
IIL DATA REGISTER
INPUT SHIFT REGISTER
ADDRESS DECODER
OUTPUT DECODER
FS1-4
TG1-2
TM1-7
PS1-3
TG1
TM1
TRACKING PHASE COMPENSATION
TM7
TG2
TM3
TM4
TM5
TM6
TM2
F SET
I SET

PIN NO.	SYMBOL	I/O	DESCIRPION
1	VC	I	Mid-point voltage input terminal.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.
3	FS3	I	Focus servo high frequency gain changeover input terminal.
4	FLB	I	Input terminal for the low frequency boost of focus servo.
5	FEO	O	Focus drive output terminal.
6	FE-	I	Inversion input terminal of focus amplifier.
7	SRCH	I	Time constant terminal to make the focus search waveform.
8	TGU	I	Tracking high frequency changeover input terminal.
11	TAO	O	Tracking drive output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.
13	SL+	I	No-inversion input terminal of sled amplifier.
14	SLO	O	Sled drive output terminal.
15	SL-	I	Inversion input terminal of sled amplifier.
16	FSET	I	Peak setting input of phase correction of focus tracking.
17	ISET	I	This terminal is flowed the current so that the focus search,tarcking jump,and sled kick height is decided.
18	SSTOP	I	Inner switch selection input terminal.
20	DIRC	I	This terminal is used when track jump.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.
22	CLK	I	Serial data transfer clock input from microprocessor.
23	XLT	I	Latch input terminal for microprocessor.
24	DATA	I	Serial data input terminal for microprocessor.
25	XRST	I	Reset input terminal.Active low.
26	C.OUT	O	Signal output to count the track numbers.
27	SENS	O	This terminal outputs FZC,and SSTOP to according command from the microprocessor.
29	MIRR	O	Mirror comparator output terminal.
30	DFCT	O	Defect comparator output terminal.
31	ASY	I	Auto asymmetry control input terminal.
32	EFM	O	EFM comparator output terminal.
33	FOK	O	Focus OK comparator output terminal.
34	CC1	O	Defect bottom hold output terminal.
35	CC2	I	Defect bottom hold input terminal from CC1.
37	CB	I	Defect bottom hold capacitor connection terminal.
38	CP	I	Mirror hold capacitor connection terminal.
39	RFI	I	RF summing amplifier input terminal.
40	RFO	O	RF summing amplifier output terminal.
42	TZC	I	Tracking zero-cross comparator input terminal.
43	TE	I	Tracking error input terminal.
44	TDFCT	I	Capacitor connection terminal for time constant when defect.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	FZC	I	Focos zero-cross comparator input terminal.
47	FE	I	Focus error input terminal.
48	FDFCT	I	Capacitor connection terminal for time constant when defect.

SM5872CN (DA CONVERTER)


MCOM
LRCI
BCKI
DI
7
8
9
10
MDT/FSEL1
11
MCK/FSEL2
12
MLEN/DEEM
13
MICROPROCESSOR INTERFACE AND DE-EMPHASIS SELECTOR
INPUT INTERFACE & INFINITY ZERO DETECTOR
5
MUTEO
L
R
MUTEI
6
ATTENUATION COUNTER
FILTER ARITHMETIC AND ATTENUATION ARITHMETIC
RSTN
14
CKSL
3
TIMING CONTROL
4
CKO
L
R
DVSS
15
DVDD
16
PWM DATA GENERATION BLOCK
L
R
NOISE SHAVER ARITHMETIC BLOCK
2
XVSS
1
XTO
28
XTI
27
XVDD
AVDD1
17
26
AVDD4
18
19
20
21
22
23
24
25
LO
AVSS1
LON
AVDD2
AVDD3
RON
AVSS2
RO

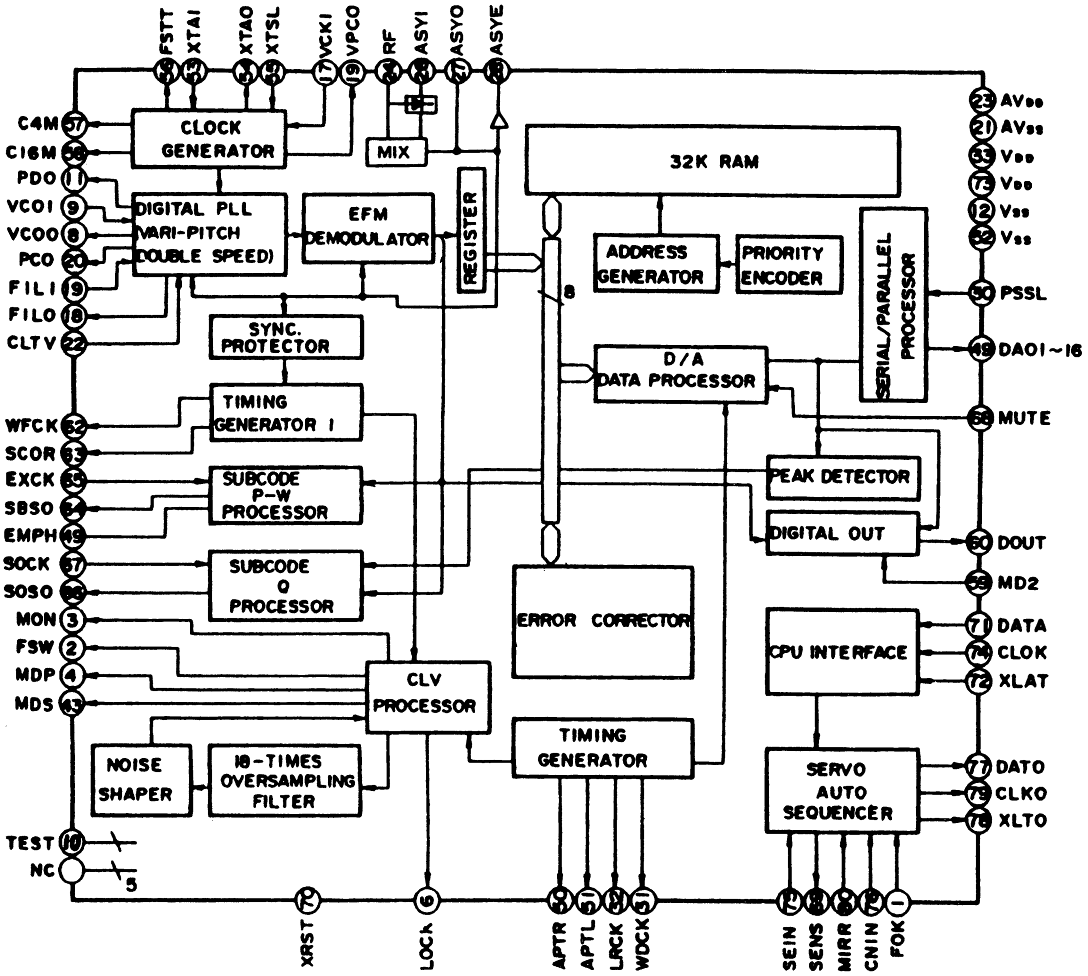
Pin No.	Terminal	I/O	Description	Pin No.	Terminal	I/O	Description
1	XTO	O	Resonator section output pin	28	XTI	I	Resonator section input pin:384fs
2	XVss		Ground for resonator system	27	XVDD		Power supply for resonator section
3	CKSL	I		26	AVDD4		Power supply for analog section
4	CKO	O	Output clock of resonator section:384fs	25	RO	O	PWM output pin of right channel
5	MUTEO	O	Infinity zero detector output	24	AVSS2		Ground pin for analog section
6	MUTEI	I	Muting input	23	RON	O	PWM output pin of right channel
7	MCOM	I	Interface switching control	22	AVDD3		Power supply for analog section
8	LRCI	I	Sampling rate clock for input data:H=L ch.L=R ch.	21	AVDD2		Power supply for analog section
9	BCKI	I	Bit clock input for input data	20	LON	O	PWM output pin of left channel
10	DI	I	Input data	19	AVSS1		Ground pin for analog section
11	MDT/FSEL1*	I	Microprocessor interface data when MCOM is H.	18	LO	O	PWM output pin of left channel
12	MCK/FSEL2*	I	Microprocessor interface clock when MCOM is H.	17	AVDD1		Power supply for analog section
13	MIEN/DEEM*	I	Microprocessor interface latch enable when MCOM is H	16	DVDD		Power supply for digital section
14	RSTN		System reset at the low level.	15	DVSS		Ground pin for digital section

*NOTE:MCOM=L

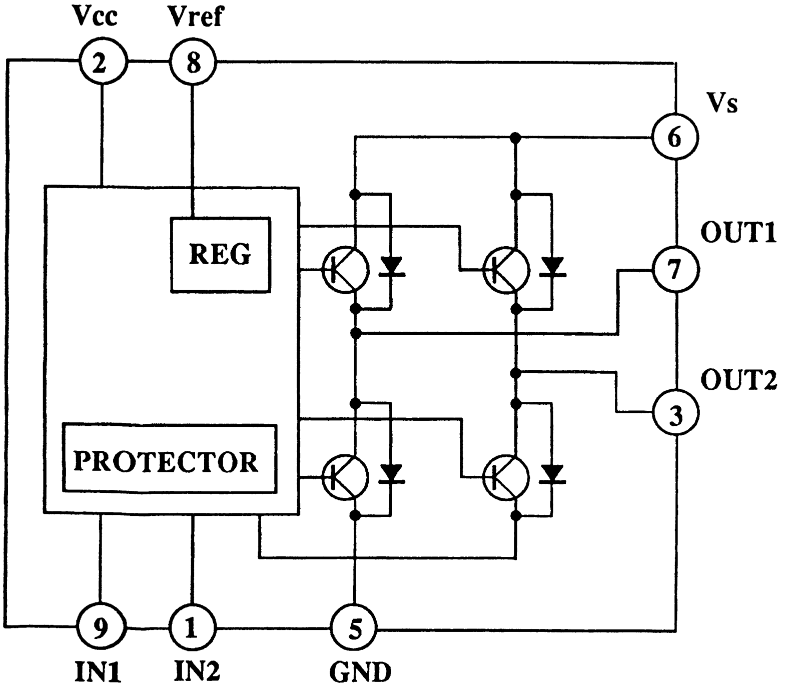
	FSEL2	
FSEL1	L	H
L	44.1kHz	48.0kHz
H	(44.1kHz)	32.0kHz

#13: MCOM=L
DEEM:De-emphasis control

CXD2500BQ (Digital Signal Processor)


FSTT
XTAI
XTAO
XTSL
VCKI
VPCO
RF
ASYI
ASYO
ASYE
C4M 57
C16M
PDO 11
VCOI 9
VCOO 8
PCO 20
FILI 19
FILO 18
CLTV 22
WFCK 62
SCOR 63
EXCK 65
SBSO 64
EMPH 49
SOCK 67
SOSO
MON 3
FSW 2
MDP 4
MDS 43
TEST 10
NC
5
CLOCK GENERATOR
MIX
DIGITAL PLL (VARI-PITCH DOUBLE SPEED)
EFM DEMODULATOR
REGISTER
32K RAM
ADDRESS GENERATOR
PRIORITY ENCODER
SERIAL/PARALLEL PROCESSOR
8
SYNC. PROTECTOR
D/A DATA PROCESSOR
TIMING GENERATOR I
SUBCODE P-W PROCESSOR
PEAK DETECTOR
DIGITAL OUT
SUBCODE Q PROCESSOR
ERROR CORRECTOR
CPU INTERFACE
CLV PROCESSOR
NOISE SHAPER
18-TIMES OVERSAMPLING FILTER
TIMING GENERATOR
SERVO AUTO SEQUENCER
23 AVDD
21 AVSS
33 VDD
73 VDD
12 VSS
VSS
50 PSSL
49 DAO1~16
58 MUTE
60 DOUT
59 MD2
71 DATA
74 CLOK
72 XLAT
77 DATO
79 CLKO
76 XLTO
70 XRST
6 LOCK
50 APTR
51 APTL
LRCK
51 WDCK
75 SEIN
SENS
MIRR
CNIN
1 FOK

TA7291 (VOLUME MOTOR DRIVER)


Vcc
Vref
2
8
Vs
6
OUT1
7
OUT2
3
REG
PROTECTOR
9
1
5
IN1
IN2
GND

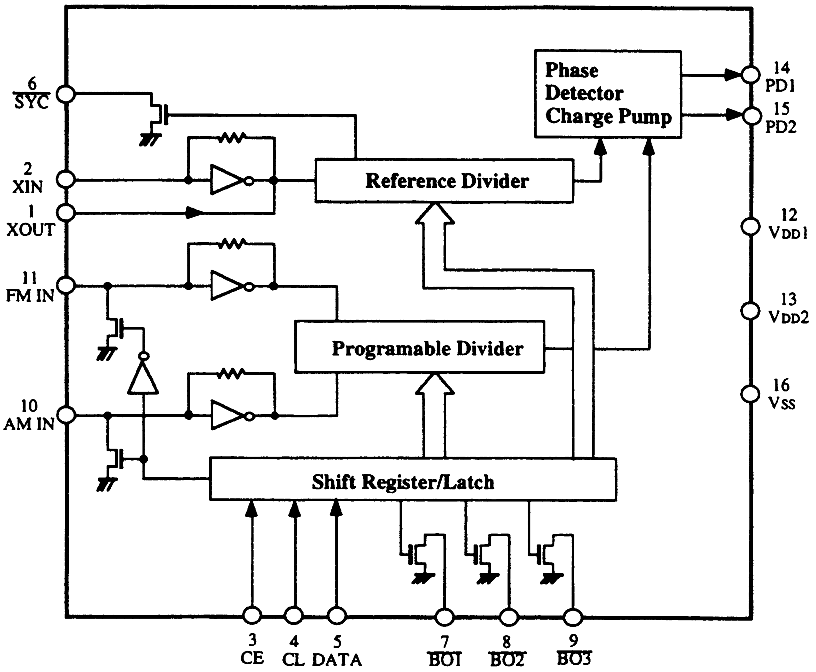
INPUT		OUTPUT		
IN1	IN2	OUT1	OUT2	MODE
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW:Counter clockwise direction
CW:Clockwise direction

NO.	SYMBOL	I/O	DESCRIPTION	
1	FOK	I	Foucs Ok input	
2	FSW	O	Output filter changeover output for spindle motor	
3	MON	O	Spindle motor control output	
4	MDP	O	Spindle motor servo control	
5	MDS	O	Spindle motor servo control	
6	LOCK	O	H when GFS is the high level	
7	NC			
8	VCOO	O	Oscillation circuit output for analog EFM PLL.	
9	VCOI	I	Oscillation circuit input for analog EFM PLL. (8.6436MHz)	
10	TEST	I	Test terminal	
11	PDO	O	Charge pump output analog EFM PLL	
12	Vss		Ground terminal	
13-15	NC			
16	VPCO	O	PLL charge pump output for variable pitch	
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)	
18	FILO	O	Filter output for master PLL.	
19	FILI	I	Filter input for master PLL.	
20	PCO	O	Charge pump output of master PLL	
21	AVss		Analog ground	
22	CLTV	I	VCO control voltage input for master	
23	AVDD		Analog section power supply (+5V)	
24	RF	I	EFM signal input	
25	BIAS	I	Asymmetry circuit constant current input	
26	ASYI	I	Asymmetry comparator voltage input	
27	ASYO	O	EFM full swing output	
28	ASYE	I	Asymmetry control circuit	
29	NC			
30	PSSL	O	Audio data output mode changeover input Serial data at L and paraller data at H.	
31	WDCK	I	D/A interface for 48 bits slot. Word clock f=2Fs.	
32	LRCK	I	D/A interface for 48 bits slot. LR clock f=Fs.	
33	VDD		Power supply terminal (+5V)	
34-49			Data output terminals	
			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output
42	DA08	O	DA08	GFS output
43	DA07	O	DA07	RFCK output
44	DA06	O	DA06	C2P0 output
45	DA05	O	DA05	XRAOF output
46	DA04	O	DA04	MNT 3 output
47	DA03	O	DA03	MNT 2 output
48	DA02	O	DA02	MNT 1 output
49	DA01	O	DA01	MNT 0 output
50	APTR	O	Control output for aperture correction. H when R ch.	
51	APTL	O	Control output for aperture correction. H when L ch.	
52	Vss		Ground terminal	
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.	
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.	
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.	
56	FSTT	O	2/3 divided output of pins 53 and 54.	
57	C4M	O	4.2336 MHz output	
58	C16M	O	16.9344 MHz output	
59	MD2	I	Digital output control input. On at high level.	
60	DOUT	O	Digital output	
61	EMPH	O	Emphasis control output. Active high.	
62	WFCK	O	Write frame clock output	
63	SCOR	O	Sub-code detection output. H when is detected SO or SI.	
64	SBSO	O	Serial output of sub-code (P～W)	
65	EXCK	I	Clock input for read out SQSO.	
66	SQSO	O	Sub Q 80 bits, PCM peak, and level data 16 bits output.	
67	SQCK	I	Clock input for read out SQSO	
68	MUTE	O	Muting control output. Active H.	
69	SENS		Sens output. Output to the microprocessor	
70	XRST	I	System reset. Reset at the low level.	
71	DATA	I	Serial data input from the microprocessor.	
72	XLTA	I	Latch input from the microprocessor. Latch the serial data at the trailing.	
73	VDD		Power supply treminal	
74	CLOK	I	Serial data transfer clock input from microprocessor	
75	SEIN	I	Sens input from SSP	
76	CNCI	I	Track jump numbers count signal input	
77	DATO	O	Serial data output to SSP	
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.	
79	CLKO	O	Serial data transfer clock output to SSP.	
80	MIRR	I	Mirror signal input	

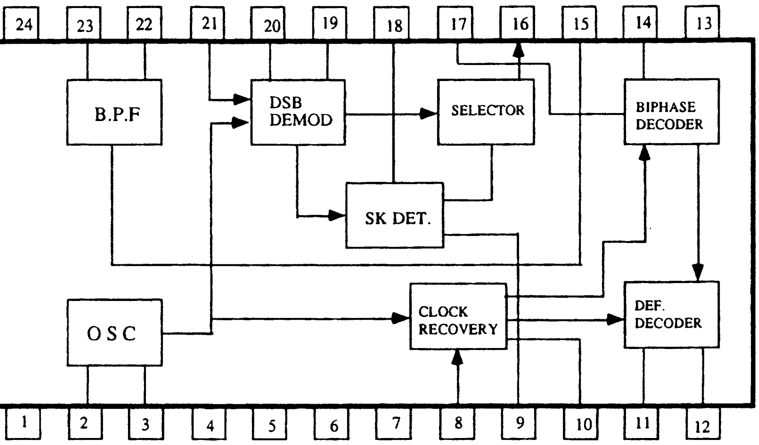
Note: SSP: IC101 CXA1372Q

LM7001 (PLL Synthesizer and Controller)


6
SYC
2
XIN
1
XOUT
11
FM IN
10
AM IN
Phase
Detector
Charge Pump
Reference Divider
Programable Divider
Shift Register/Latch
14
PD1
15
PD2
12
VDD1
13
VDD2
16
Vss
3
CE
4
CL
5
DATA
7
BO1
8
BO2
9
BO3

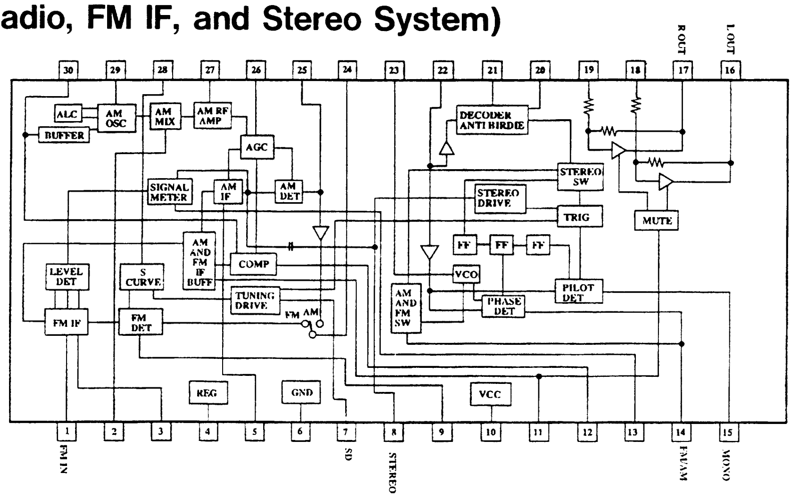
Pin No.	Terminal	Description
1	XOUT	Connect the 7.2MHz crystal resonator.
2	XIN	
3	CE	Chip enable terminal. Connect to the terminal PLLCE1 of microprocessor.
4	CL	Serial clock input terminal. Connect to the terminal PLLCL of microprocessor.
5	DATA	Serial data input terminal. Connect to the terminal PLLDATA of microprocessor.
6	SYN	Not used.
7	SAT/CANLE	Power source control terminal for DSR. Cable at the high level and Satellite at low.
8	LPF	LPF selector output.
9	ANT	Antenna selector output. A at high level and B at low level.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator input terminal.
12	VDD1	Power source terminal for back-up.
13	VDD2	Power source terminal.
14	PD1	Phase comparator output
15	PD2	Phase comparator output
16	Vss	Ground terminal

μPC1346CS (RDS DECODER)


24
23
22
21
20
19
18
17
16
15
14
13
B.P.F
DSB
DEMOD
SELECTOR
BIPHASE
DECODER
SK DET.
OSC
CLOCK
RECOVERY
DEF.
DECODER
1
2
3
4
5
6
7
8
9
10
11
12

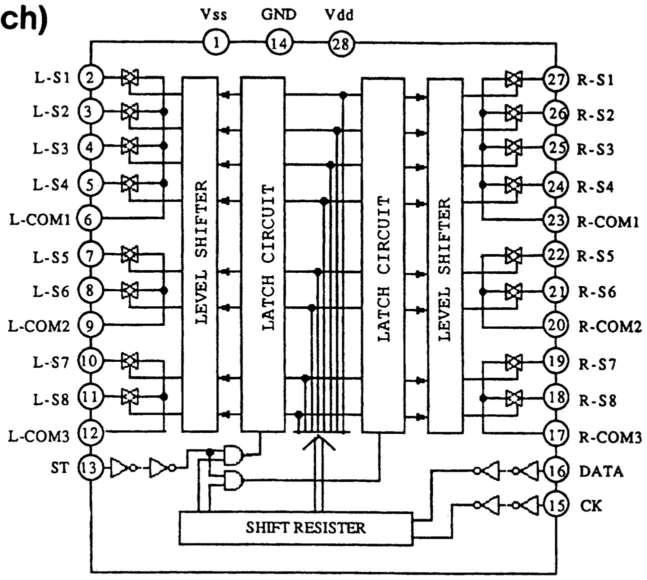
No.	Terminal	Description	No.	Terminal	Description
1	Vcc	Supply voltage for the digital circuit	13	GND	Ground for the analog circuit
2	OSC IN	Resonator input	14	INTEG	Integrating filter terminal
3	OSC OUT	Resonator output	15	BPF ADJ	Adjustment fc of band pass filter
4	GND	Ground for the digital circuit	16	PSK OUT	Biphase signal output
5	TEST1	Test input	17	PSK IN	Biphase decoder input
6	TEST2	Test input	18	LPF SK	Low pass filter for the detection SK
7	OP.CTL	Control input of the operation stop	19	LPF Q	Low pass filter for the crossed detector
8	S/L CTL	Mode control input of the synchonizing detection	20	LPF I	Low pass filter for the synchronizing detector
9	SK OUT	SK detection output	21	DSB IN	DSB demodulator circuit input
10	RDS OUT	RDS synchonizing detection output	22	BPF OUT	Band pass filter output
11	CLOCK OUT	Bit rate clock output	23	BPF IN	Band pass filter input
12	DATA OUT	RDS data output	24	Vcc	Supply voltage for analog circuit

LA1836 (AM Radio, FM IF, and Stereo System)


R OUT
L OUT
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
ALC
AM OSC
BUFFER
AM MIX
AM RF AMP
AGC
SIGNAL METER
AM IF
AM DET
DECODER ANTI BIRDIE
STEREO SW
STEREO DRIVE
TRIG
MUTE
FF
FF
FF
VCO
PILOT DET
PHASE DET
AM AND FM SW
LEVEL DET
S CURVE
AM AND FM IF BUFF
COMP
TUNING DRIVE
FM
AM
FM IF
FM DET
REG
GND
VCC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
FM IN
SD
STEREO
FM/AM
MONO

No.	Terminal Descriptions	No.	Terminal Descriptions
1	FM IF amplifier input terminal	13	Pilot filter and monaural selector terminal
2	Power supply terminal	14	FM Multiplex input terminal
3	FM tuning level adjustment terminal	15	AM detector signal input terminal
4	Ground terminal	16	FM/AM detector signal output terminal
5	FM discriminator terminal	17	AM AGC terminal
6	Tuning indicator terminal	18	AM IF input terminal
7	Stereo indicator terminal	19	AM mixer output terminal
8	IF request and Muting terminal	20	AM antenna terminal
9	IF signal terminal	21	FM band width adjustment terminal
10	Right channel output terminal	22	AM local oscillator connection terminal
11	Left channel output terminal	23	Reference voltage terminal
12	PLL filter/AM/FM band selector terminal	24	AM local oscillator output terminal

TC9164N (Analog Switch)


Vss
GND
Vdd
1
14
28
L-S1 2
L-S2 3
L-S3 4
L-S4 5
L-COM1 6
L-S5 7
L-S6 8
L-COM2 9
L-S7 10
L-S8 11
L-COM3 12
ST 13
LEVEL SHIFTER
LATCH CIRCUIT
LATCH CIRCUIT
LEVEL SHIFTER
27 R-S1
26 R-S2
25 R-S3
24 R-S4
23 R-COM1
22 R-S5
21 R-S6
20 R-COM2
19 R-S7
18 R-S8
17 R-COM3
16 DATA
15 CK
SHIFT RESISTER

REMOVEMENT OF TRAY ASS'Y

Remove the top cover.

Turn the locked screw to the clockwise to release the lock of gear.(Refer fig.1)

Pull out the tray ass'y.

Remove the stopper.(Refer fig.2)

Press the tray stopper to the arrow mark direction and remove the tray ass'y.

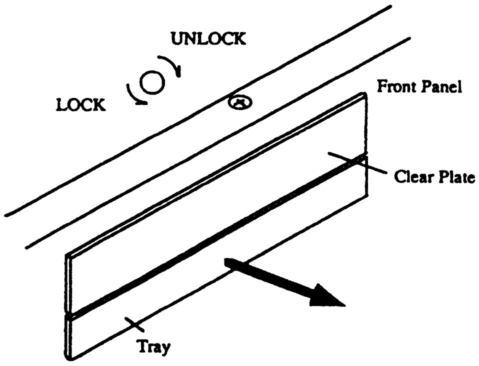

UNLOCK
LOCK
Front Panel
Clear Plate
Tray

fig.1

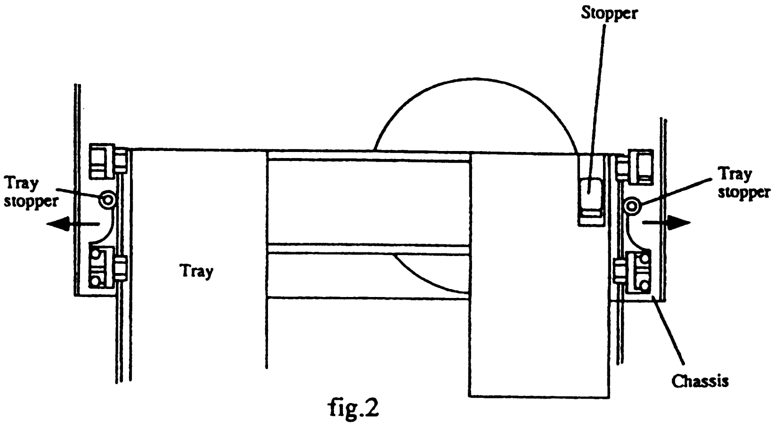
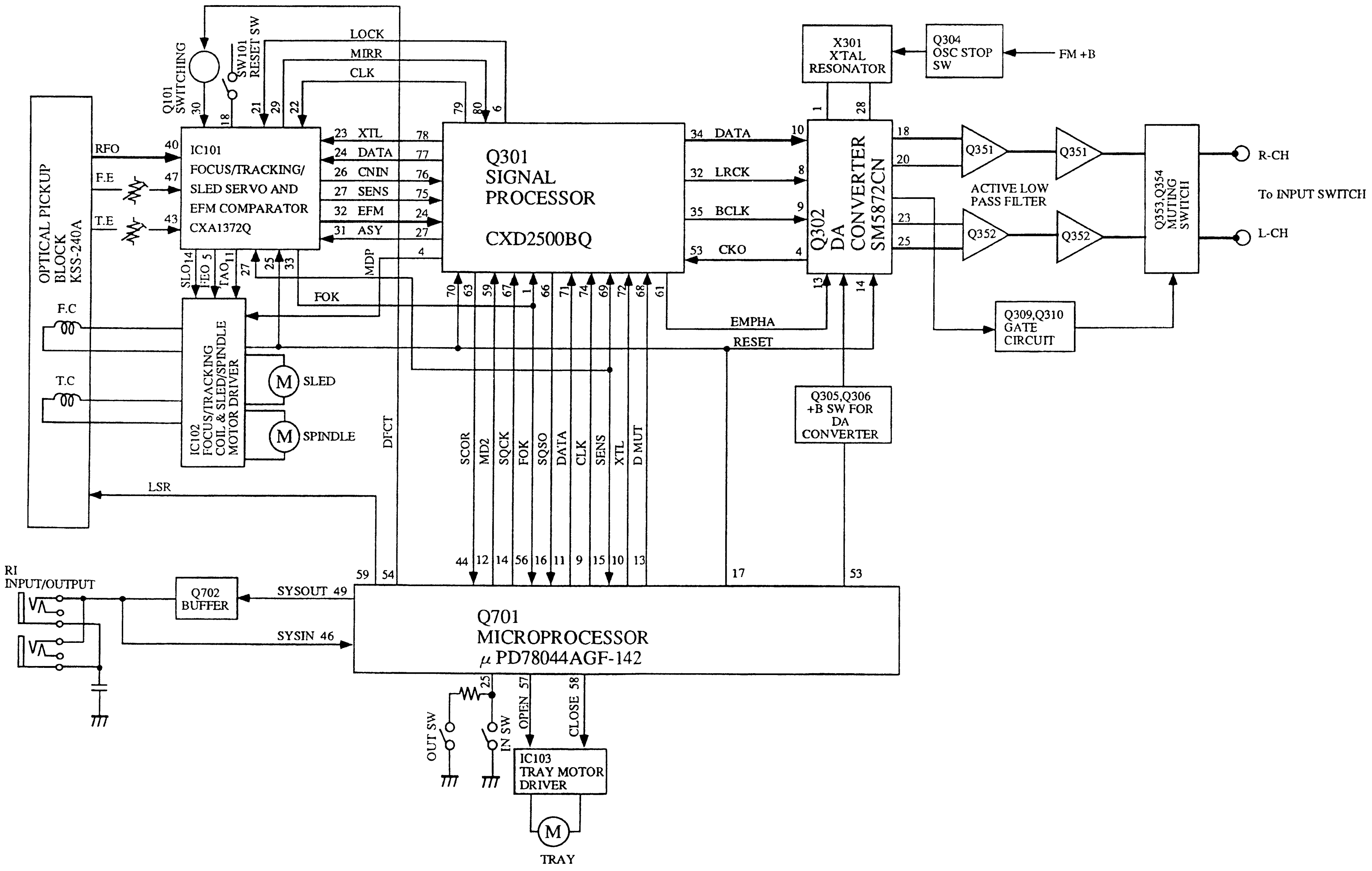

Stopper
Tray stopper
Tray
Tray stopper
Chassis

fig.2

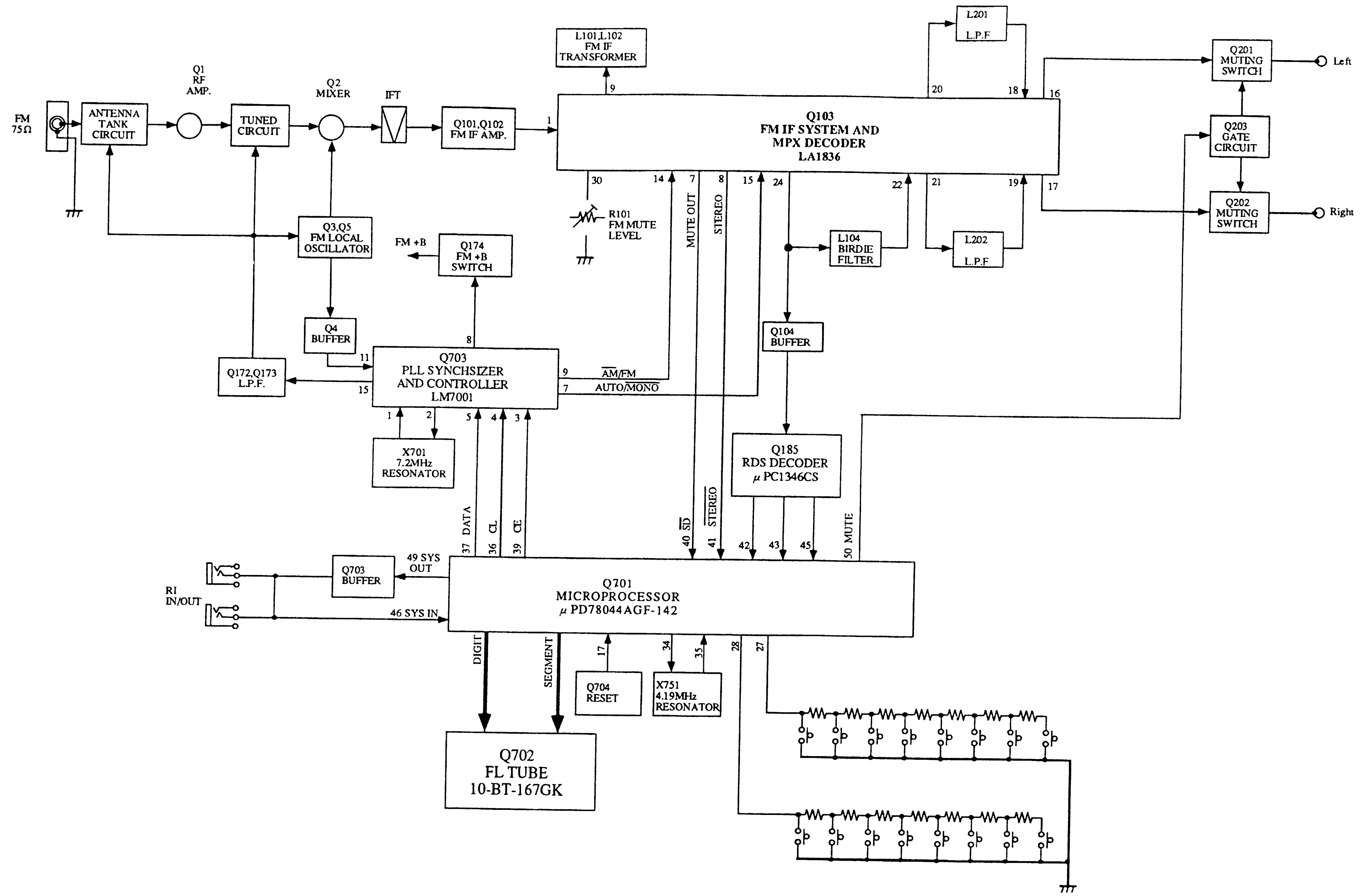
BLOCK DIAGRAM

—CD section—

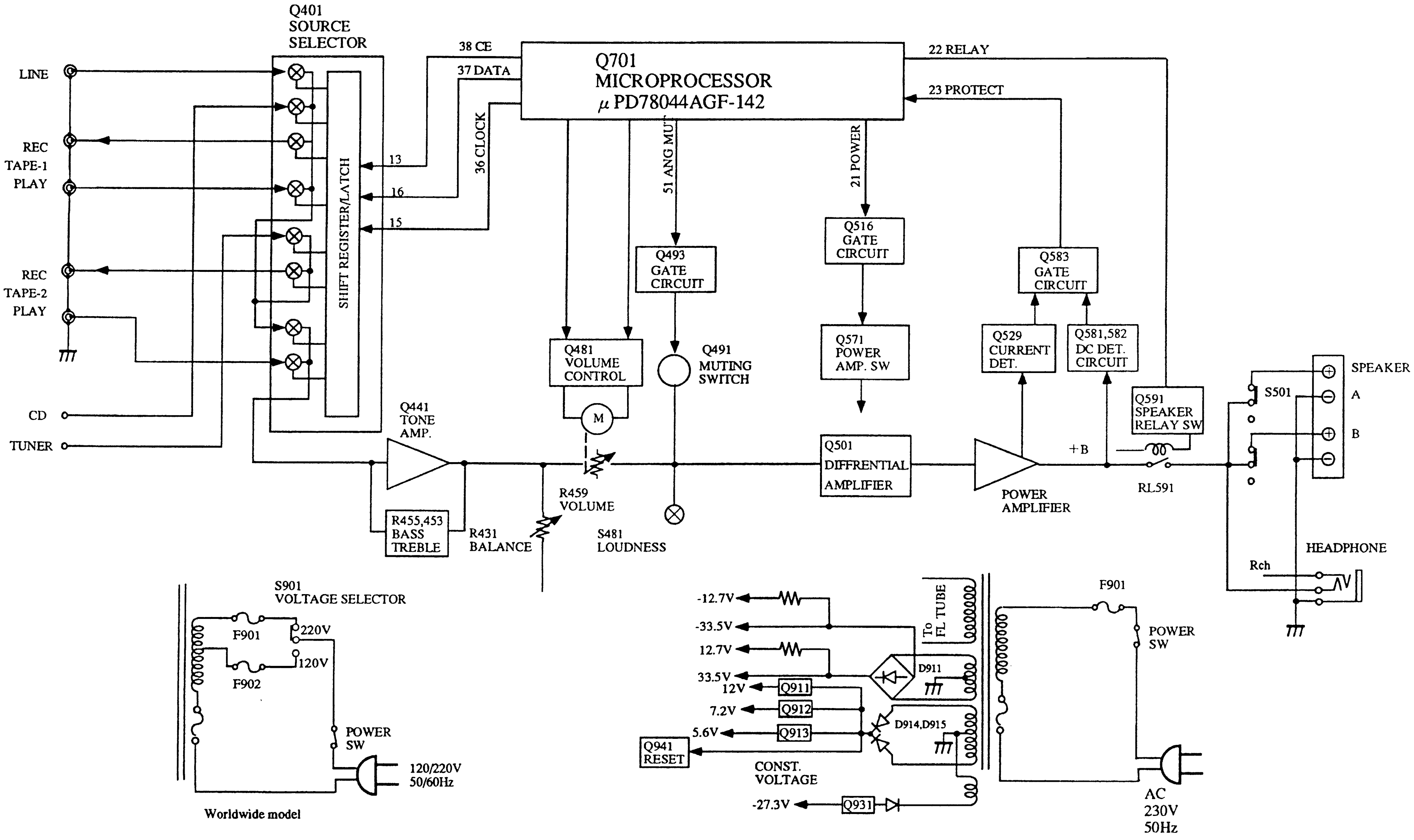

OPTICAL PICKUP BLOCK KSS-240A
RFO
F.E
T.E
F.C
T.C
LSR
IC101 FOCUS/TRACKING/ SLED SERVO AND EFM COMPARATOR CXA1372Q
40
47
43
Q101 SWITCHING
SW101 RESET SW
30
18
21
29
22
LOCK
MIRR
CLK
23 XTL
24 DATA
26 CNIN
27 SENS
32 EFM
31 ASY
SLO14
FEO 5
TAO11
27
25
33
MDP
FOK
IC102 FOCUS/TRACKING COIL & SLED/SPINDLE MOTOR DRIVER
SLED
SPINDLE
M
DFCT
Q301 SIGNAL PROCESSOR CXD2500BQ
78
77
76
75
24
27
4
79
80
6
70
63
59
67
1
66
71
74
69
72
68
61
34 DATA
32 LRCK
35 BCLK
53 CKO
EMPHA
RESET
SCOR
MD2
SQCK
FOK
SQSO
DATA
CLK
SENS
XTL
D MUT
X301 XTAL RESONATOR
Q304 OSC STOP SW
FM +B
1
28
Q302 DA CONVERTER SM5872CN
10
8
9
4
13
14
18
20
23
25
Q351
Q352
ACTIVE LOW PASS FILTER
Q353,Q354 MUTING SWITCH
R-CH
L-CH
To INPUT SWITCH
Q309,Q310 GATE CIRCUIT
Q305,Q306 +B SW FOR DA CONVERTER
Q701 MICROPROCESSOR μ PD78044AGF-142
59
54
44
12
14
56
16
11
9
15
10
13
17
53
SYSOUT 49
SYSIN 46
Q702 BUFFER
RI INPUT/OUTPUT
25
OPEN 57
CLOSE 58
OUT SW
IN SW
IC103 TRAY MOTOR DRIVER
TRAY

BLOCK DIAGRAM

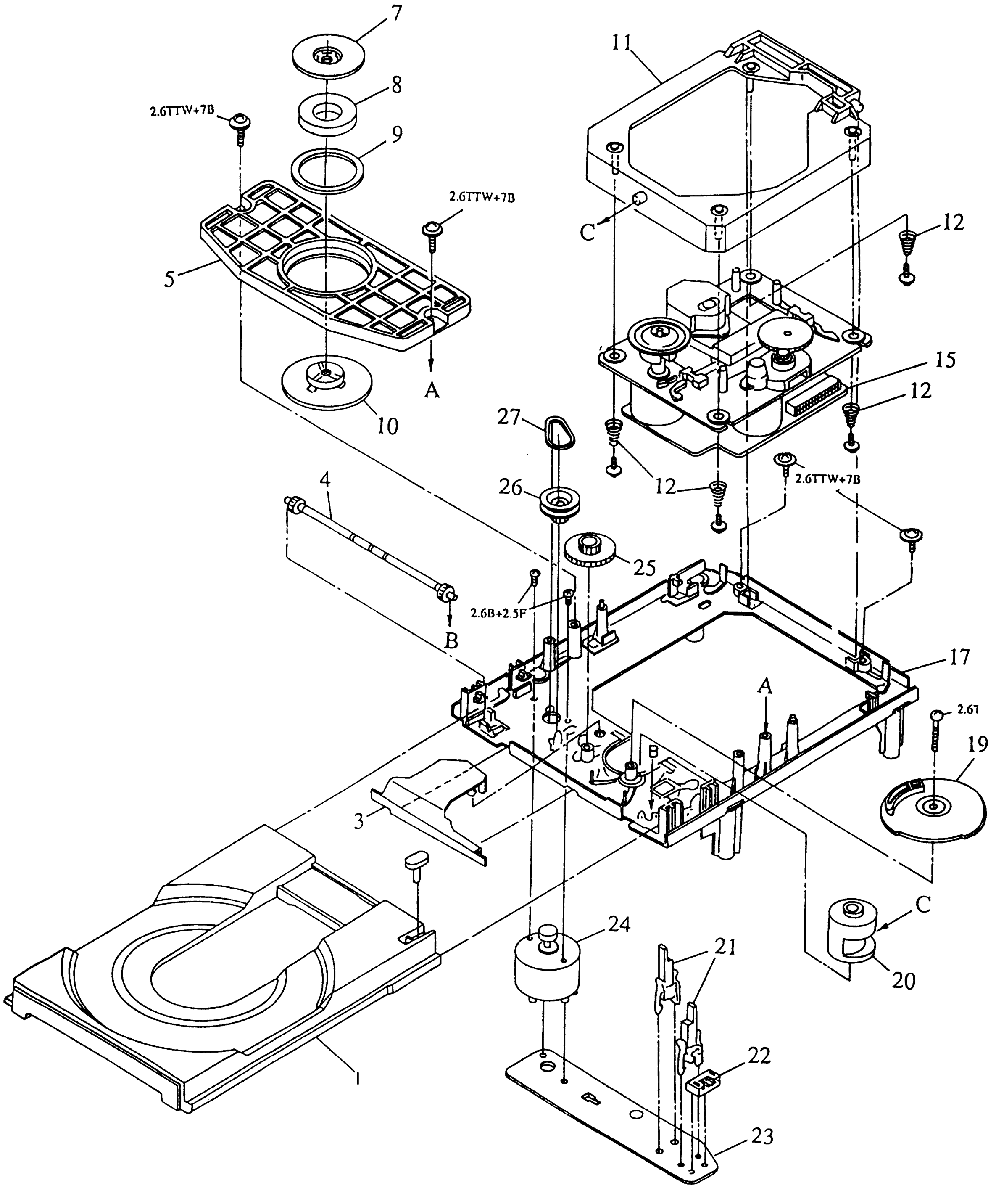
—Tuner section—

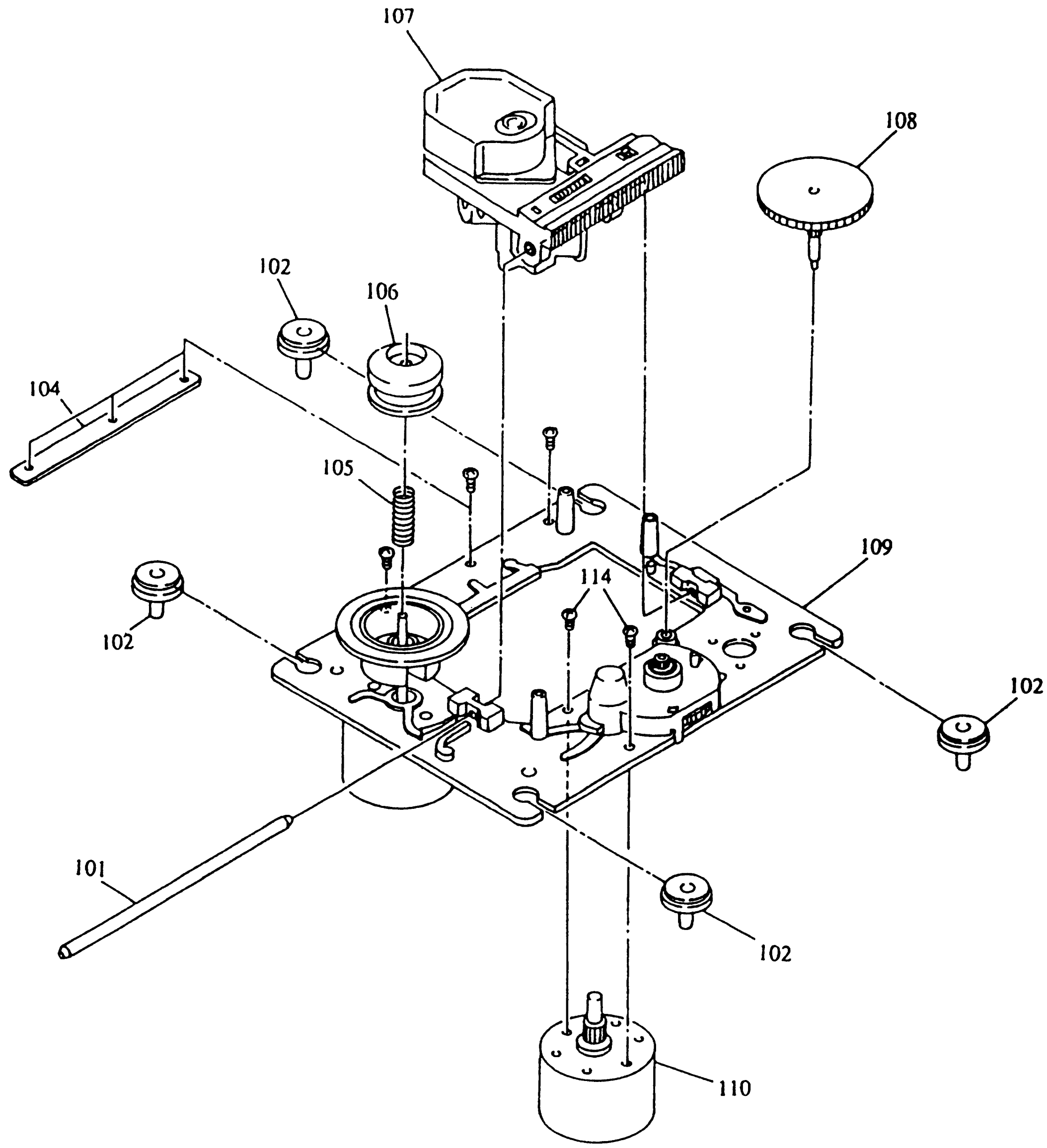

FM 75Ω
ANTENNA TANK CIRCUIT
Q1 RF AMP.
TUNED CIRCUIT
Q2 MIXER
IFT
Q101,Q102 FM IF AMP.
Q3,Q5 FM LOCAL OSCILLATOR
Q4 BUFFER
Q172,Q173 L.P.F.
FM +B
Q174 FM +B SWITCH
Q703 PLL SYNCHSIZER AND CONTROLLER LM7001
AM/FM
AUTO/MONO
X701 7.2MHz RESONATOR
L101,L102 FM IF TRANSFORMER
Q103 FM IF SYSTEM AND MPX DECODER LA1836
R101 FM MUTE LEVEL
MUTE OUT
STEREO
L104 BIRDIE FILTER
L201 L.P.F
L202 L.P.F
Q104 BUFFER
Q185 RDS DECODER μ PC1346CS
Q201 MUTING SWITCH
Q203 GATE CIRCUIT
Q202 MUTING SWITCH
Left
Right
37 DATA
36 CL
39 CE
40 SD
41 STEREO
42
43
45
50 MUTE
49 SYS OUT
46 SYS IN
RI IN/OUT
Q703 BUFFER
Q701 MICROPROCESSOR μ PD78044AGF-142
DIGIT
SEGMENT
Q702 FL TUBE 10-BT-167GK
17
Q704 RESET
34
35
X751 4.19MHz RESONATOR
28
27
1
2
3
4
5
7
8
9
11
14
15
16
17
18
19
20
21
22
24
30

— Amplifier section —


Q401
SOURCE
SELECTOR
SHIFT REGISTER/LATCH
LINE
REC
TAPE-1
PLAY
REC
TAPE-2
PLAY
CD
TUNER
13
16
15
38 CE
37 DATA
36 CLOCK
Q701
MICROPROCESSOR
μ PD78044AGF-142
51 ANG MUT
21 POWER
22 RELAY
23 PROTECT
Q493
GATE
CIRCUIT
Q491
MUTING
SWITCH
Q516
GATE
CIRCUIT
Q571
POWER
AMP. SW
Q583
GATE
CIRCUIT
Q529
CURRENT
DET.
Q581,582
DC DET.
CIRCUIT
Q591
SPEAKER
RELAY SW
Q481
VOLUME
CONTROL
M
Q441
TONE
AMP.
R455,453
BASS
TREBLE
R431
BALANCE
R459
VOLUME
S481
LOUDNESS
Q501
DIFFRENTIAL
AMPLIFIER
POWER
AMPLIFIER
+B
RL591
S501
SPEAKER
A
B
HEADPHONE
Rch
S901
VOLTAGE SELECTOR
F901
F902
220V
120V
POWER
SW
120/220V
50/60Hz
Worldwide model
-12.7V
-33.5V
12.7V
33.5V
12V
7.2V
5.6V
Q911
Q912
Q913
Q941
RESET
CONST.
VOLTAGE
-27.3V
Q931
D911
D914,D915
To
FL TUBE
F901
POWER
SW
AC
230V
50Hz

MECHANISM-EXPLODED VIEW


7
11
8
2.6TTW+7B
9
2.6TTW+7B
C
12
5
15
A
12
10
27
12
12
2.6TTW+7B
4
26
25
2.6B+2.5F
B
17
A
2.6T
B
19
3
C
24
21
20
22
1
23



PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	24840053	Tray
3	24822014	Gear cover
4	24810020	Tray gear
5	24840061	Chucking plate
7	24830003	Chucking yoke
8	24832004	Magnet
9	24836013	Damper
10	24810024	Chucking plate
11	24802012	Sub-chassis
12	24820023	Spring
15	24840075	CD servo pcb ass'y
17	24802013	Main chassis
19	24810021	Drive gear
20	24840063	Control cam
21	24840064	Leafswitch
22	25055369	NPLG-5P352,Plug
23	24840066	Loading motor pc board
24	24840067	Loading motor
25	24810022	Middle gear
26	24810025	Loading plate
27	24816008	Belt
101	24828006	Sled shaft S
102	24836014	Insulator S
104	24822015	Plate S
105	24820024	Spring
106	24824003	Center ring
107	24110011	KSS-240A,Optical pickup
108	24810023	Wheel
109	24802014	Chassis
110	24804012	Motor gear

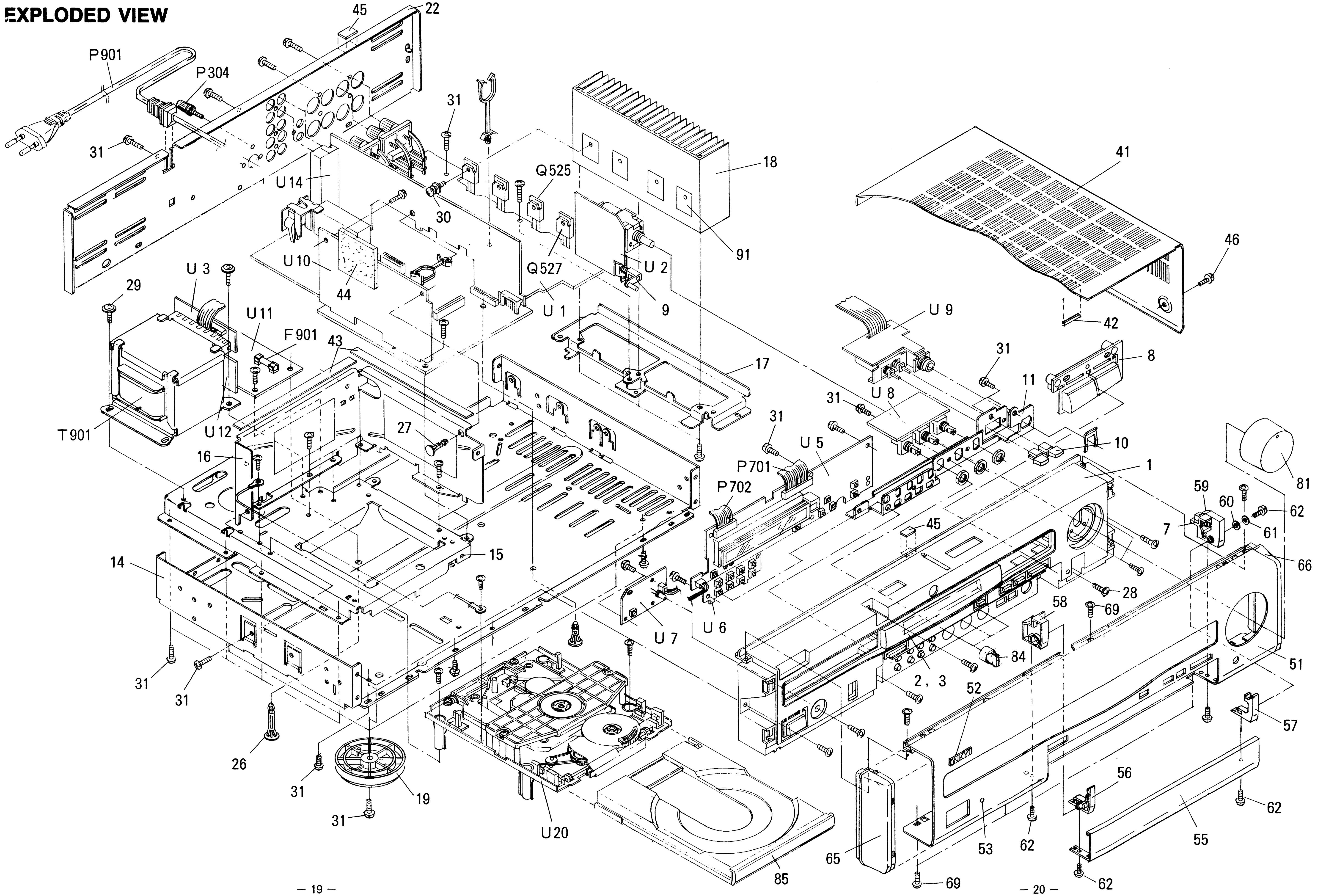
PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27110876	Front bracket <S>
	27110875	Front bracket <B>
2	28133338	Back plate
3	28191721	Clear plate
4	27262594	Plate F <S>
	27262595	Plate F <B>
7	27230025	Push latch
8	28325163	Knob, Play <S>
	28325162	Knob, Play <B>
9	38325165	Knob, Loudness <S>
	38325166	Knob, Loudness <B>
10	28325168	Knob, Speaker <S>
	28325169	Knob, Speaker <B>
11	27130751	Bracket F
14	27100301	Chassis
15	27130752	Bracket M
16	27130753	Bracket L
17	27130754	Bracket H
18	27160355	Radiator
19	27175292	Leg
22	27122115	Rear panel <P>
	27122116	Rear panel <W>
26	27190428A	KGLS-10RF,Holder
27	27190657	KGLS-18RF,Holder
28	838430107	3TTB+10S(BC), Self-tapping screw
29	830440089	4TTC+8C(BC), Self-tapping screw
30	801433	3SMS8W.SW+14B(BC), Self-tapping screw
31	838130088	3TTB+8B, Self-tapping screw
41	28184608	Top cover <S>
	28184609	Top cover <B>
42	28140302	3×60×10,Cushion
43	28140720	0.5×150×10,Cushion
44	28141313	3×20×3,Cushion
45	28141288	0.8×10×15,Cushion
46	838230088	3TTB+8B(Ni), Self-tapping screw <S>
	838430088	3TTB+8B(BC), Self-tapping screw <B>
51	1H270121	Front panel ass'y <S>
	1H271121	Front panel ass'y <B>
52	28135199	Badge
53	28198777	Facet
55	28148315	Door <S>
	28148315	Door <B>
56	28180115A	Hinge L <S>
	28180116A	Hinge L <B>
57	28180117A	Hinge R <S>
	28180118A	Hinge R <B>
58	27190958	Holder L <S>
	27190959	Holder L <B>
59	27190961	Holder R <S>
	27190960	Holder R <B>
60	870148	WW-4, Wave washer
61	87642607	W2.6×7F(BC), Washer
62	838426088	2.6TTB+8B(BC), Self-tapping screw
65	28125293	End cap L <S>
	28125293	End cap L <S>
66	28125296	End cap R <S>
	28125296	End cap R <S>
69	838130088	3TTB+8B,Self-tapping screw

REF.NO.	PART NO.	DESCRIPTION
81	28325171	Knob, Volume <S>
	28325172	Knob, Volume <B>
84	28325178	Knob, Selector <S>
	28325157	Knob, Selector <B>
85	28148313	Door, CD <S>
	28148312	Door, CD <B>
91	223021	TBM-51W-9043, Isolation sheet
F901	252073	⚠ 1.6A-SE-EAK, Primary fuse
F902	252150	⚠ 3.15A-TSC, Primary fuse <W>
P303	2046221512	NCFC6-221512, Flexible flat cable
P304	25060044	3×14, Terminal GND
P701	2047251512	NCFC7-251512, Flexible flat cable
P702	2047171012	NCFC7-171012, Flexible flat cable
P901	253207AHIT	AS-CEE, Power supply cord
Q525,Q526	2202923,	* 2SC5196-O,
	2202922,	* 2SC5196-R,
	2202373,	* 2SC4466-O,
	2202374 or	* 2SC4466-Y or
	2202375	* 2SC4466-P, Transistor
Q527,Q528	2202913,	* 2SA1939-O,
	2202912,	* 2SA1939-R,
	2202363,	* 2SA1693-O,
	2202364 or	* 2SA1693-Y or
	2202365	* 2SA1693-P, Transistor
T901	2301127	⚠ NPT-1247P, Power transformer <P>
	2301128	⚠ NPT-1247DG, Power transformer <W>
U20	24800009CY	NCD-130S, CD mechanism ass'y
U1	1H270513-1	NAAR-5513-1, Main circuit pc board ass'y <P>
	1H270513-1A	NAAR-5513-1A, Main circuit pc board ass'y <W>
U2	1H270514-1	NAETC-5514-1, Volume pc board ass'y
U3	1H270515-1	NAETC-5515-1, Secondary circuit pc board ass'y
U5	1H270517-1	NADIS-5517-1, Display circuit pc board ass'y
U6	1H270518-1	NASW-5518-1, Operation switch pc board ass'y <P>
	1H270518-1A	NASW-5518-1A, Operation switch pc board ass'y <W>
U7	1H270519-1	NASW-5519-1, Power switch pc board ass'y <P>
	1H270519-1A	NASW-5519-1A, Power switch pc board ass'y <W>
U8	1H270520-1	NAAF-5520-1, Tone circuit pc board ass'y
U9	1H270521-1	NAAF-5521-1, Headphone terminal pc board ass'y
U10	1H270522-1	NADG-5522-1, CD circuit pc board ass'y
U11	1H270523-1	NAPS-5523-1, Power supply circuit pc board ass'y <P>
	1H270523-1A	NAPS-5523-1A, Power supply circuit pc board ass'y <W>
U12	1H270524-1	NAETC-5524-1, Primary circuit pc board ass'y
U13	1H270525-1	NASW-5525-1, Voltage selector switch pc board ass'y <W>
U14	1H270526-1	NAAF-5526-1, Input terminal pc board ass'y

NOTE: <P>:230V model only
<W>:Worldwide model only
<S>:Silver model only
<B>:Black model only

EXPLODED VIEW

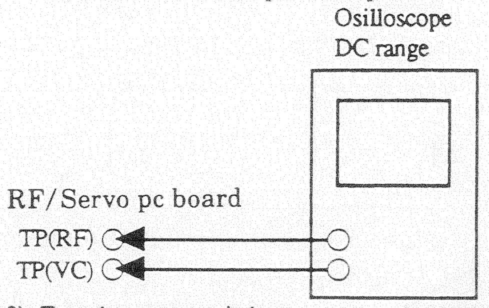

45
22
P901
P304
31
31
U14
30
Q525
18
41
91
Q527
U2
U10
44
U1
9
46
U3
29
U11
F901
43
17
U9
42
31
8
11
31
U8
T901
U12
16
27
31
U5
10
P701
1
P702
59
60
81
62
7
61
45
66
15
14
28
69
58
U7
U6
84
51
2, 3
52
57
31
31
26
56
31
19
62
31
U20
65
53
62
55
85
69
62

ADJUSTMENT PROCEDURES

It is not necessary to perform the adjustment of optical pickup.

This confirmation should be made when replacing the optical pickup.

1). Connect the oscilloscope to test points RF and VC.



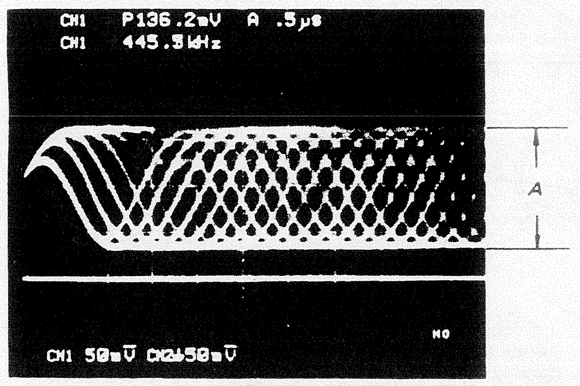
2). Turn the power switch on.

3). Load the test disc YEDS-18 on the tray and press the play button.

4). Confirm that the waveform on the oscilloscope is optimum eye pattern and optimum level as shown photo 1.

Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform



A = 1.2V ± 0.2 (Vp-p)

REFERENCE

Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

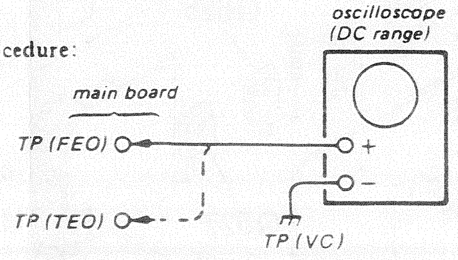
Gain / Symptoms	Focus	Tracking
• The time until music starts becomes longer for STOP → ▷PLAY or automatic selection (⏮ ⏭ buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP → ▷PLAY or automatic selection (⏮ ⏭ buttons pressed.)	–	low
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More poise during 2-axis device operation.	high	high

The following is a simple adjustment method.

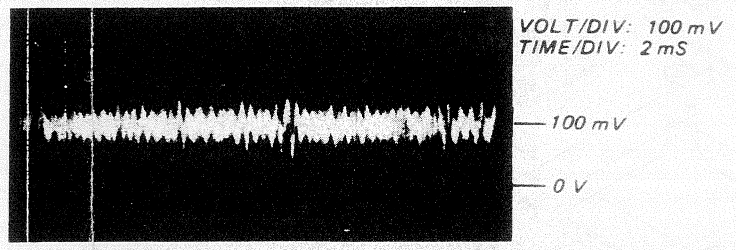
– Simple Adjustment –

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:

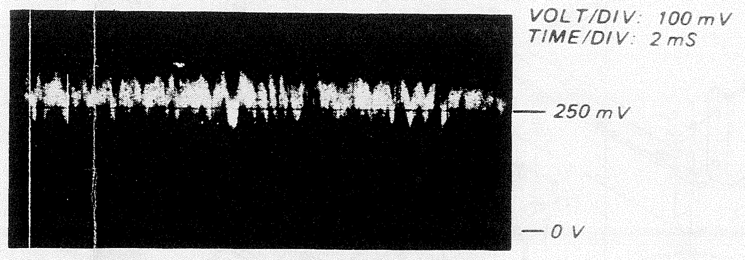


1. Keep the set horizontal.
   (If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Insert disc (YEDS-18) and press ▷PLAY button.
3. Connect oscilloscope to RF/Servo board TP (FE).
4. Adjust RV102 so that the waveform is as shown in the figure below. (focus gain adjustment)

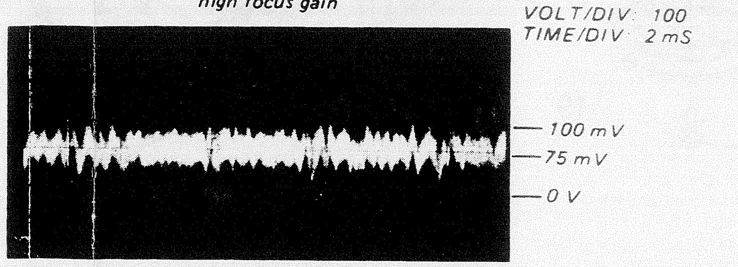


- Incorrect Examples (DC level changes more than on adjusted waveform)

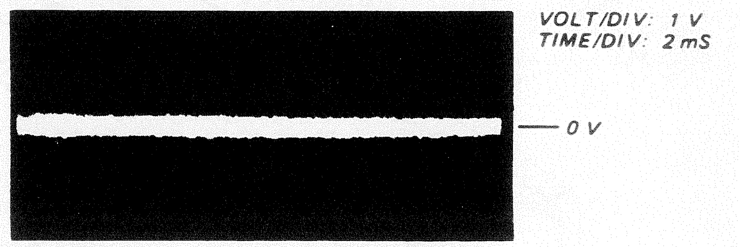
low focus gain



high focus gain

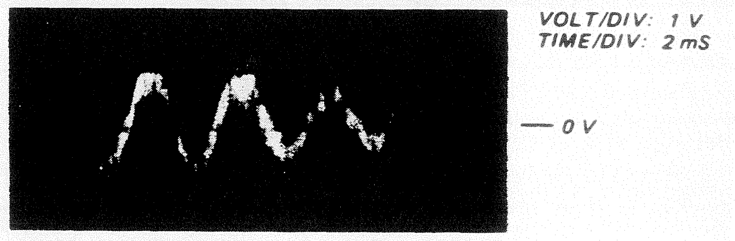


5. Connect oscilloscope to RF/Servo board TP (TE).
6. Adjust RV101 so that the waveform is as shown in the figure below. (tracking gain adjustment)

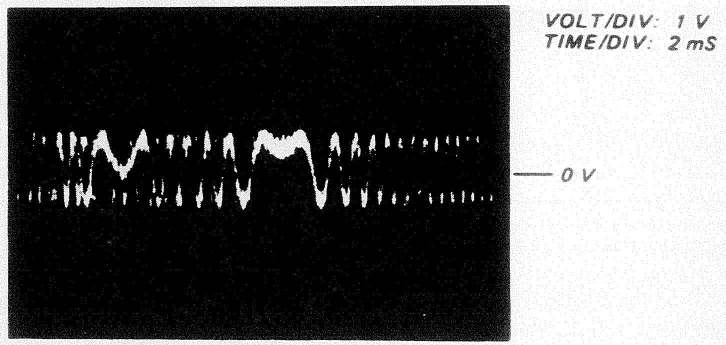


- Incorrect Examples (fundamental wave appears)

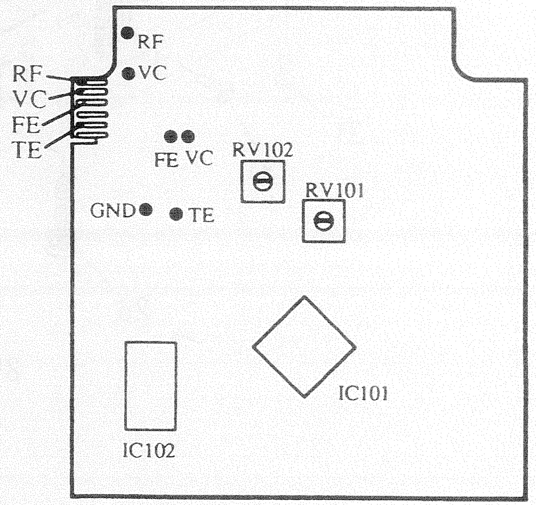
low tracking gain



high tracking gain
(higher fundamental wave than for low gain)



Adjustment Location: RF/Servo board



Preparation

1. Input

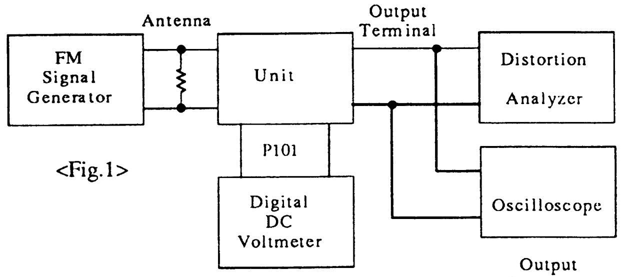
FM mono: 1kHz, 75kHz devi., 60dB/μ V
FM stereo: 1kHz, 67.5kHz devi., 60dB/μ V
Pilot signal 19kHz 7.5kHz devi.
AM: 400Hz, 30% mod.

2. Outputs

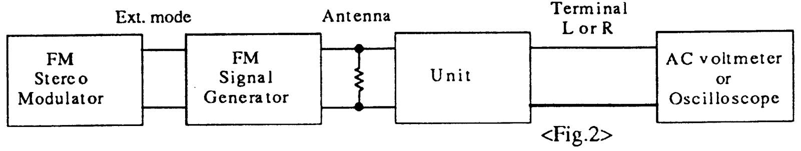
Connect the non-inductive type resistor of 8 ohms to the all speaker terminals unless otherwise noted.

FM Adjustment

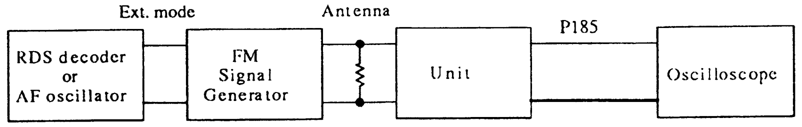
Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dBf(60dB μ)	—	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch:OFF/MONO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	FM MUTE/MODE switch:ON/STEREO Don't turn more than ±90°
Muting Level	1	Fig.1	99.0MHz 1kHz 22.5kHz devi. 19.2dBf(14dB)	—	99.0MHz	Oscilloscope	R101	Signal output	FM MUTE/MODE switch:ON/STEREO
	2		99.0MHz 1kHz 22.5kHz devi. 18.2dBf(13dB)					No signal	
RDS		Fig.3	99.0MHz Ext. mod.60dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R185	Maximum	


Antenna
Output Terminal
FM Signal Generator
Unit
Distortion Analyzer
P101
Digital DC Voltmeter
Oscilloscope

<Fig.1>


Ext. mode
Antenna
Output Terminal L or R
FM Stereo Modulator
FM Signal Generator
Unit
AC voltmeter or Oscilloscope

<Fig.2>


Ext. mode
Antenna
P185
RDS decoder or AF oscillator
FM Signal Generator
Unit
Oscilloscope

<Fig.3>

Idling Current Adjustment

Connect the DC voltmeter to the terminals P521, and P522 (VCT and IID) on the main circuit pc board. Adjust the trim resistors R531 and R532 so that the indicator of voltmeter becomes 7.5 ± 1.5mV.
NOTE:Adjust after switching on for 5 minutes.
Set Volume knob to the minimum position.

SERVICE PROCEDURES

1. Replacing the fuses

This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utlise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce darnier est indique la qu le present symbol est appose.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252063	0.5A-SE-EAK, Primary
F902	252150	3.15A-TSC, Primary (Worldwide model only)

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.
To perform a result, please follow the procedure below.

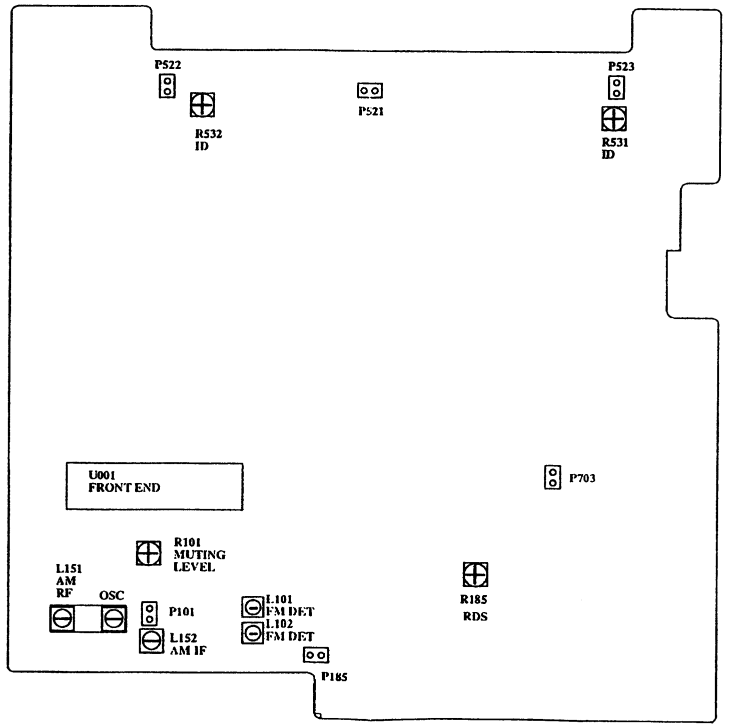
1. **Press and hold down the CD button, then press the POWER button.**
2. **Press the POWER button.**
3. **After "clear" is displayed, the preset memory and each mode stored in the memory, are initialized and will return to the factory settings.**

3. Safety-check out

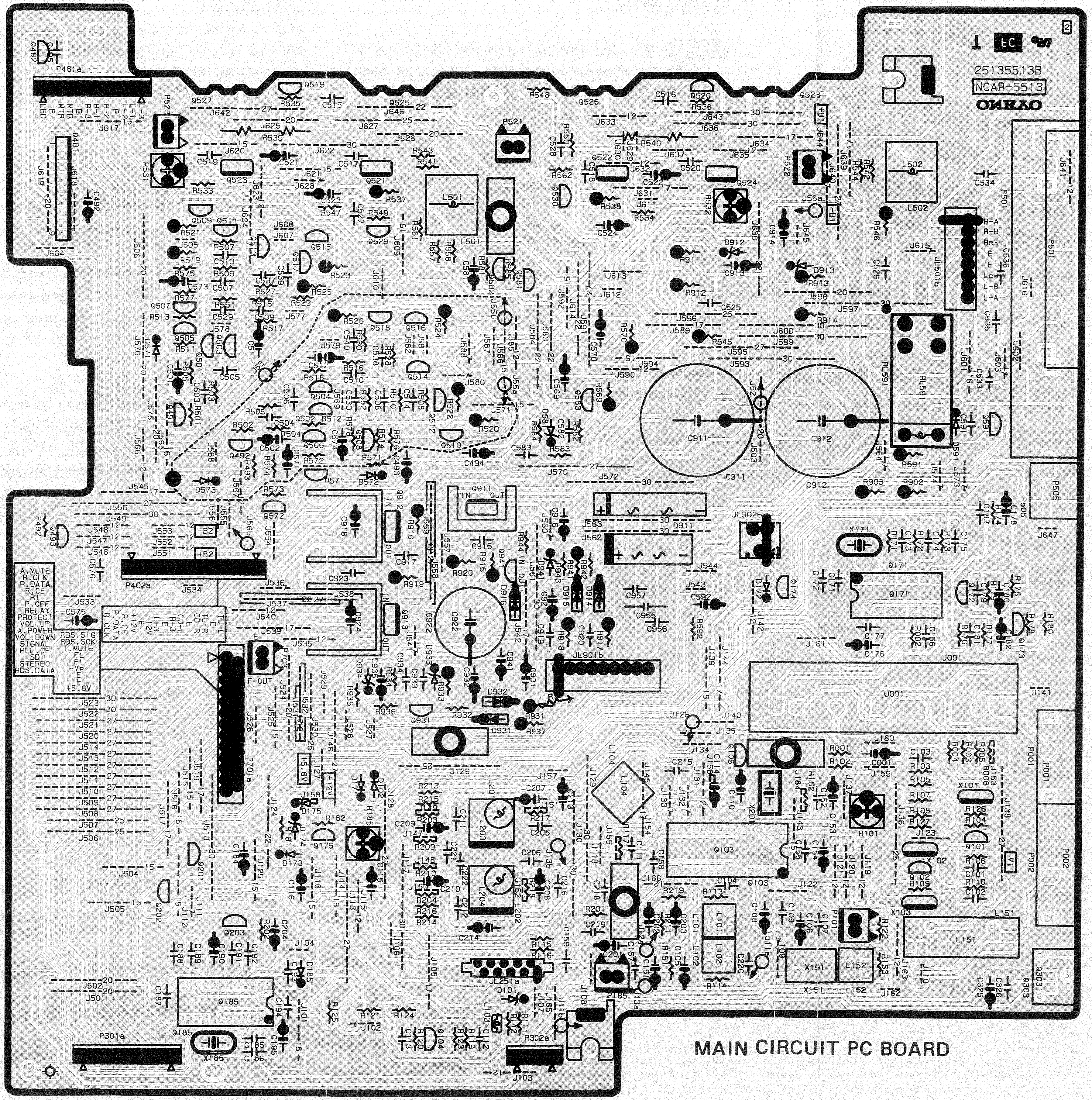
After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.
Specifications: More than 10 MΩ at 500V.

4. Memory preservation

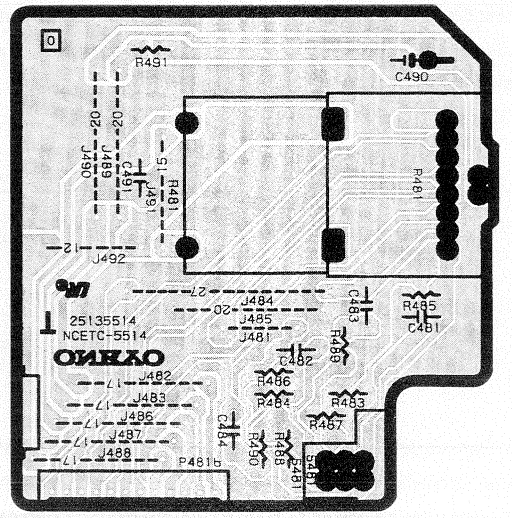
This unit does not require memory preservation batteries.
A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.
The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.
The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.


P522
R532
ID
P521
P523
R531
ID
U001
FRONT END
P703
R101
MUTING
LEVEL
L151
AM
RF
OSC
P101
L152
AM IF
L101
FM DET
L102
FM DET
P185
R185
RDS

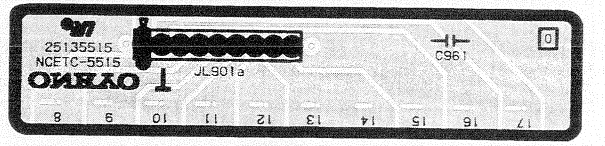
PC BOARD VIEW FROM BOTTOM SIDE


25135513B
NCAR-5513
ONKYO
P481a
P402a
P701a
P301a
P302a
U001
Q171
Q103
Q185
L501
L502
L151
X151
X185
C911
C912
RL591
JL901b
JL251a
A.MUTE
R.CLK
R.DATA
R.CE
RI
P.OFF
RELAY
PROTECT
VOL.UP
A.POWER
VOL.DOWN
RDS.SIG
SIGNAL
RDS.SCK
PLL.CE
T.MUTE
SD
STEREO
RDS.DATA
+5.6V

MAIN CIRCUIT PC BOARD


25135514
NCETC-5514
ONKYO
R491
C490
R481
J492
P481b

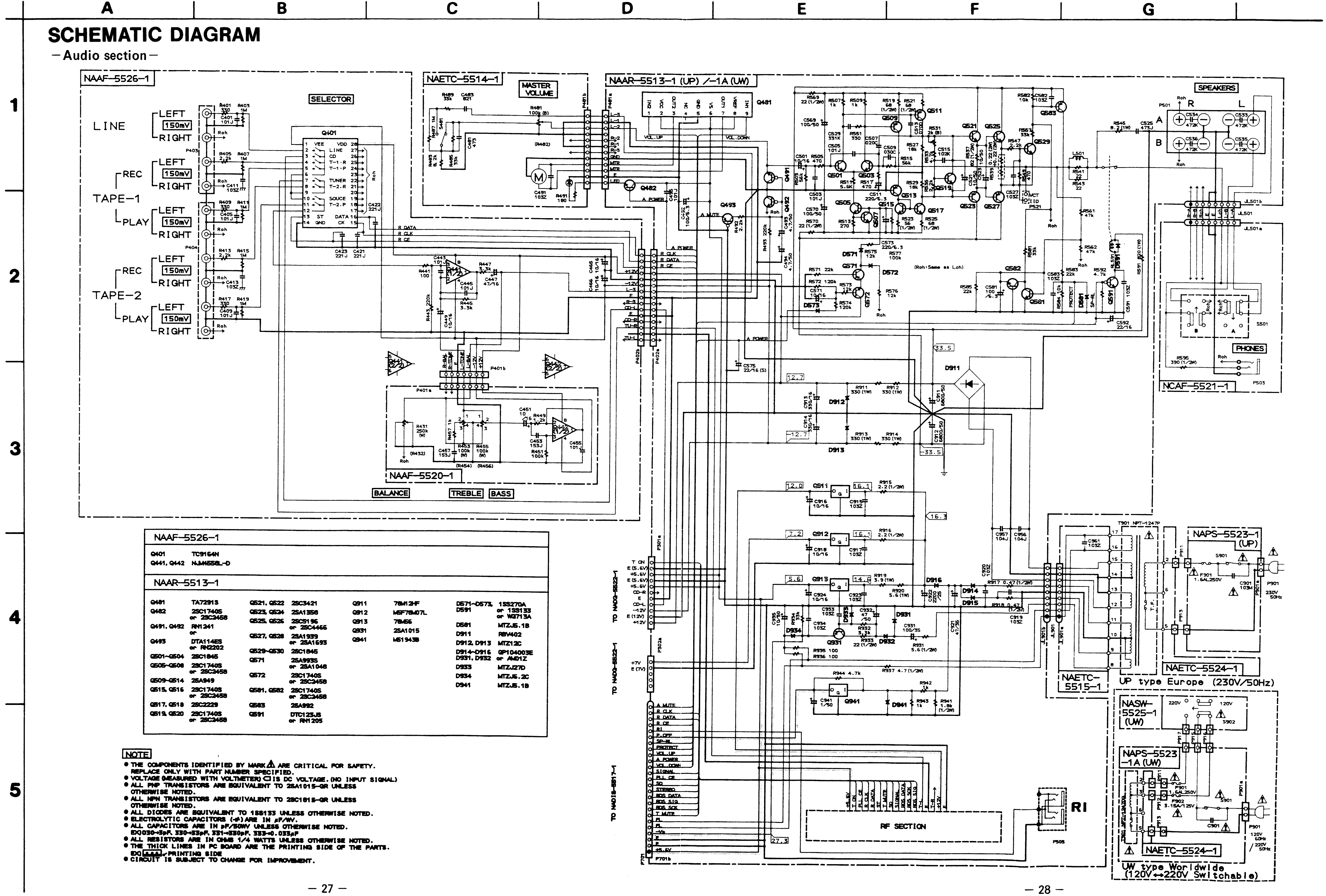
VOLUME PC BOARD


25135515
NCETC-5515
ONKYO
JL901a
C961

SECONDARY CIRCUIT PC BOARD

SCHEMATIC DIAGRAM

－Audio section－


A
B
C
D
E
F
G
1
2
3
4
5
NAAF-5526-1
LINE
TAPE-1
TAPE-2
REC
PLAY
LEFT
RIGHT
150mV
SELECTOR
Q401
NAETC-5514-1
MASTER VOLUME
NAAR-5513-1 (UP) /-1A (UW)
Q481
Q482
Q493
NAAF-5520-1
BALANCE
TREBLE
BASS
(Roh:Same as Loh)
SPEAKERS
R
L
A
B
PHONES
NCAF-5521-1
D911
D912
D913
Q911
Q912
Q913
Q931
Q941
T901 NPT-1247P
NAPS-5523-1 (UP)
230V 50Hz
NAETC-5524-1
NAETC-5515-1
UP type Europe (230V/50Hz)
NASW-5525-1 (UW)
NAPS-5523-1A (UW)
120V 60Hz / 220V 50Hz
UW type Worldwide (120V↔220V Switchable)
TO NADG-5522-1
TO NADIS-5517-1
RF SECTION
RI
P505

NAAF-5526-1

Q401	TC9164N
Q441, Q442	NJM4558L-D

NAAR-5513-1

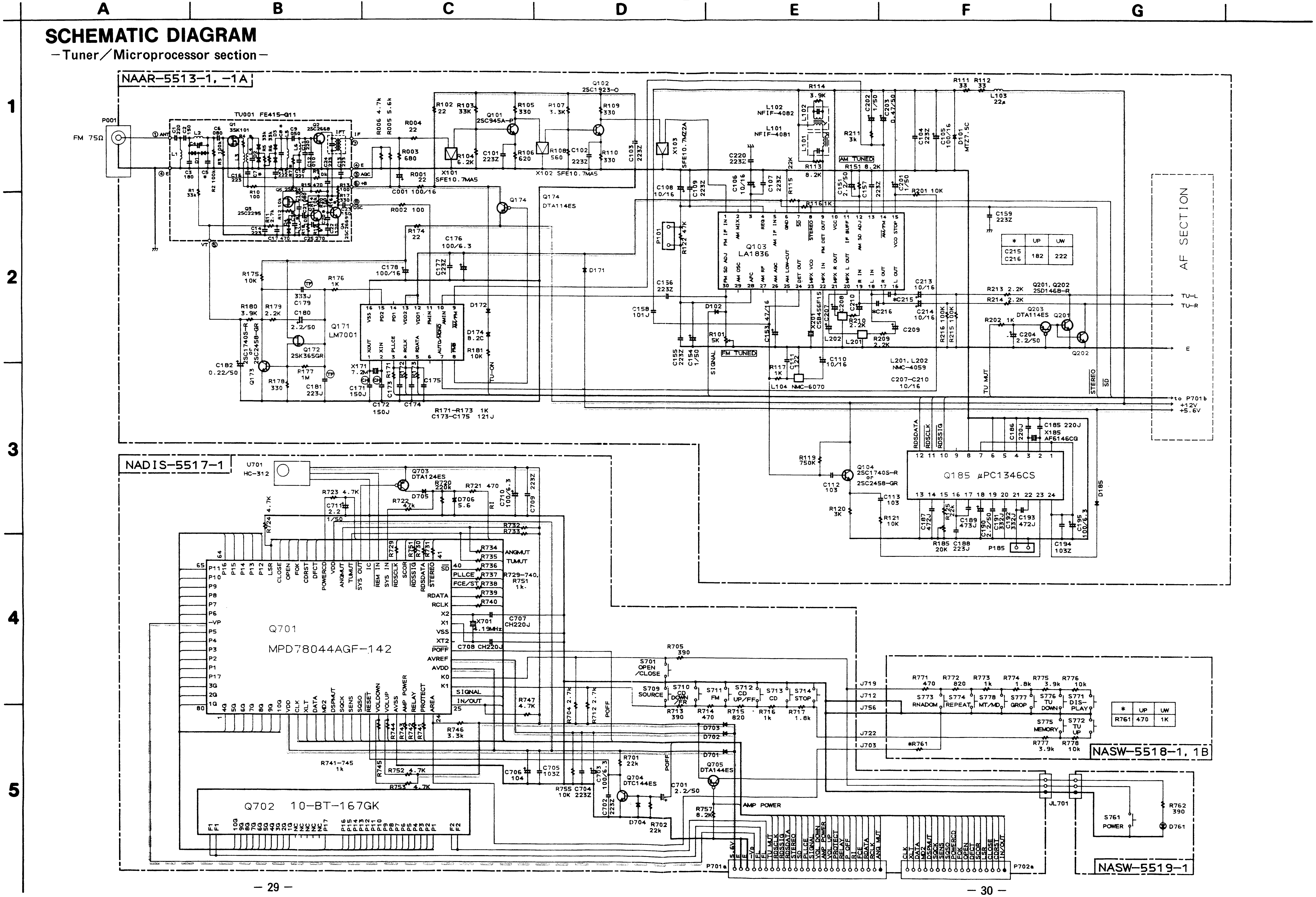
Q481	TA7291S
Q482	2SC1740S or 2SC2458
Q491, Q492	RN1241 or
Q493	DTA114ES or RN2202
Q501~Q504	2SC1845
Q505~Q508	2SC1740S or 2SC2458
Q509~Q514	2SA949
Q515, Q516	2SC1740S or 2SC2458
Q517, Q518	2SC2229
Q519, Q520	2SC1740S or 2SC2458
Q521, Q522	2SC3421
Q523, Q524	2SA1358
Q525, Q526	2SC5196 or 2SC4466
Q527, Q528	2SA1939 or 2SA1693
Q529~Q530	2SC1845
Q571	2SA993S or 2SA1048
Q572	2SC1740S or 2SC2458
Q581, Q582	2SC1740S or 2SC2458
Q583	2SA992
Q591	DTC123JS or RN1205
Q911	78M12HF
Q912	MSF78M07L
Q913	78M56
Q931	2SA1015
Q941	M51943B
D571~D573, D591	1SS270A or 1SS133 or WG713A
D581	MTZJ5.1B
D911	RBV402
D912, D913	MTZ12C
D914~D916 D931, D932	GP104003E or AM01Z
D933	MTZJ27D
D934	MTZJ6.2C
D941	MTZJ5.1B

NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ▭ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (⊣⊢) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 030→3pF, 330→33pF, 331→330pF, 333→0.033μF
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) ▭ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

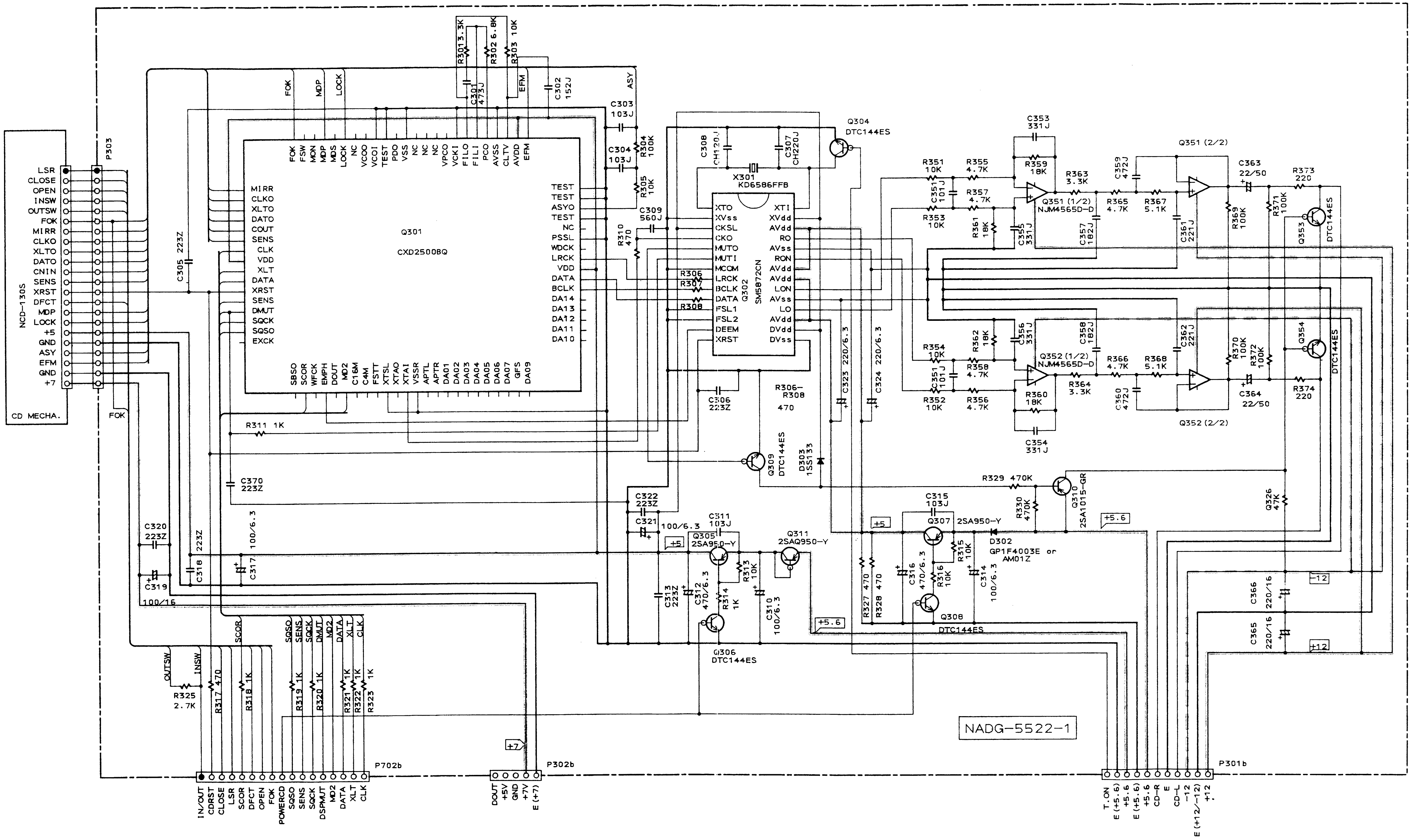
SCHEMATIC DIAGRAM

–Tuner／Microprocessor section–

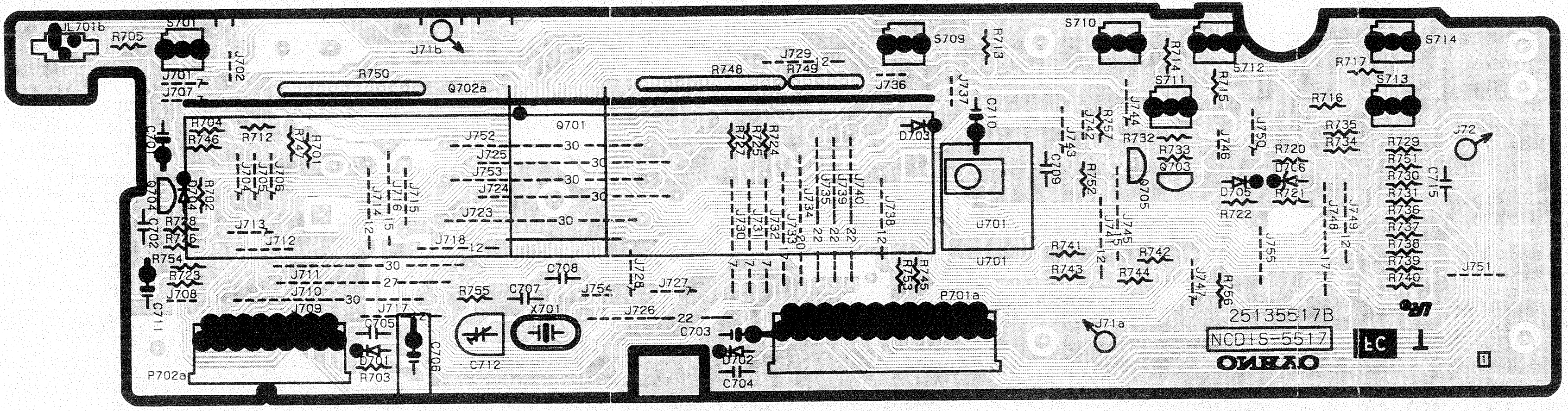

A
B
C
D
E
F
G
1
2
3
4
5
NAAR-5513-1, -1A
P001
FM 75Ω
TU001 FE415-Q11
Q1 3SK101
Q2 2SC2668
Q3 2SC2295
IFT
Q102 2SC1923-O
Q101 2SC945A-P
X101 SFE10.7MA5
X102 SFE10.7MA5
X103 SFE10.7MZ2A
Q174 DTA114ES
L102 NFIF-4082
L101 NFIF-4081
AM TUNED
FM TUNED
Q103 LA1836
X201 CSB456F15
L201, L202 NMC-4059
L104 NMC-6070
C207–C210 10/16
Q171 LM7001
X171 7.2M
Q172 2SK365GR
Q173 2SC1740S-R or 2SC2458-GR
R171–R173 1K
C173–C175 121J
D171
D172
D174 8.2C
D101 MTZ7.5C
L103 22µ
*
UP
UW
C215 C216
182
222
Q201, Q202 2SD1468-R
Q203 DTA114ES
AF SECTION
TU-L
TU-R
E
to P701b
+12V
+5.6V
TU MUT
STEREO
SD
SIGNAL
RDSDATA
RDSCLK
RDSSIG
Q104 2SC1740S-R or 2SC2458-GR
Q185 µPC1346CS
X185 AF6146CG
P185
D185
NADIS-5517-1
U701 HC-312
Q703 DTA124ES
D705
D706 5.6
Q701
MPD78044AGF-142
X701 4.19MHz
C707 CH220J
C708 CH220J
ANGMUT
TUMUT
PLLCE
FCE/ST
RDATA
RCLK
X2
X1
VSS
XT2
POFF
AVREF
AVDD
K0
K1
SIGNAL
IN/OUT
R729–740, R751 1k
R741–745 1k
Q702 10-BT-167GK
S701 OPEN /CLOSE
S709 SOURCE
S710 CD DOWN /FR
S711 FM
S712 CD UP/FF
S713 CD
S714 STOP
Q704 DTC144ES
Q705 DTA144ES
D701
D702
D703
D704
AMP POWER
P701a
P702a
J719
J712
J756
J722
J703
S773 RNADOM
S774 REPEAT
S775 MEMORY
S776 TU DOWN
S777 GROP
S771 DIS-PLAY
S772 TU UP
*
UP
UW
R761
470
1K
NASW-5518-1, 1B
JL701
S761 POWER
R762 390
D761
NASW-5519-1

SCHEMATIC DIAGRAM

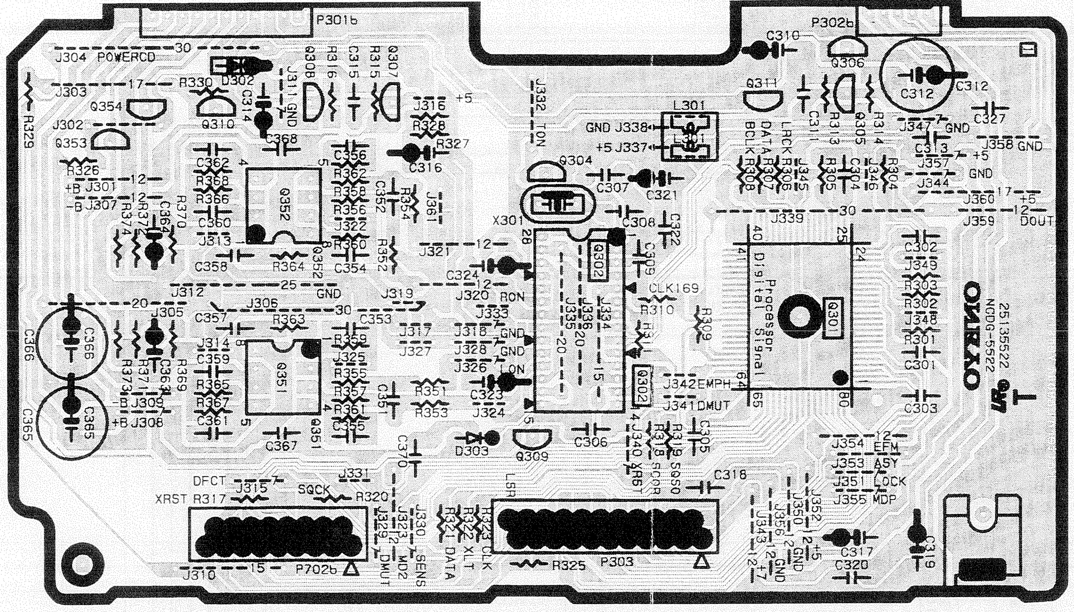
—CD section—


NCD-130S
CD MECHA.
LSR
CLOSE
OPEN
INSW
OUTSW
FOK
MIRR
CLKO
XLTO
DATO
CNIN
SENS
XRST
DFCT
MDP
LOCK
+5
GND
ASY
EFM
GND
+7
P303
Q301
CXD2500BQ
Q302
SM5872CN
X301
KD6586FFB
Q304
DTC144ES
Q351 (1/2)
NJM4565D-D
Q351 (2/2)
Q352 (1/2)
NJM4565D-D
Q352 (2/2)
Q353
DTC144ES
Q354
DTC144ES
Q305
2SA950-Y
Q306
DTC144ES
Q307
2SA950-Y
Q308
DTC144ES
Q309
DTC144ES
Q310
2SA1015-GR
Q311
2SAQ950-Y
D302
GP1F4003E or
AM01Z
D303
1SS133
R301 3.3K
R302 6.8K
R303 10K
R304 100K
R305 10K
R306–R308
470
R310 470
R311 1K
R325 2.7K
R329 470K
R330 470K
Q326 47K
C301 473J
C302 152J
C303 103J
C304 103J
C305 223Z
C306 223Z
C307 CH220J
C308 CH120J
C309 560J
C353 331J
C354 331J
C363 22/50
C364 22/50
C365 220/16
C366 220/16
R373 220
R374 220
NADG-5522-1
P702b
IN/OUT
CDRST
CLOSE
LSR
SCOR
DFCT
OPEN
FOK
POWERCD
SQSO
SENS
SQCK
DSPMUT
MD2
DATA
XLT
CLK
P302b
DOUT
+5V
GND
+7V
E (+7)
P301b
T.ON
E (+5.6)
+5.6
E (+5.6)
+5.6
CD-R
E
CD-L
-12
E (+12/-12)
+12

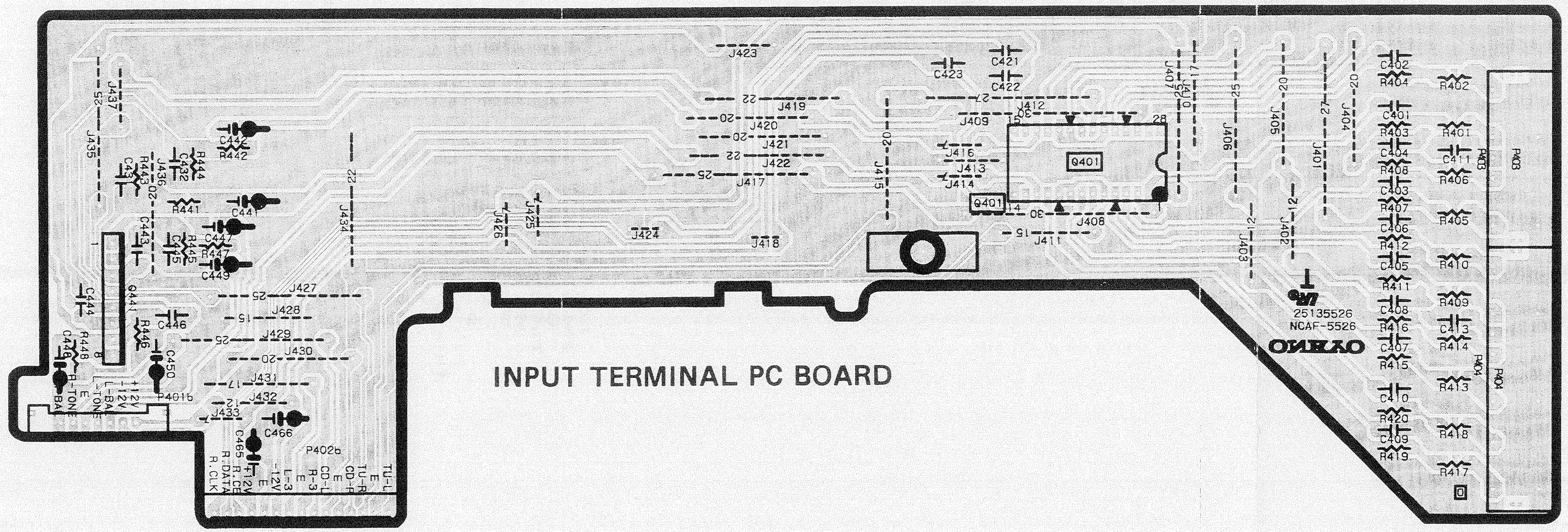
PC BOARD VIEW FROM BOTTOM SIDE


25135517B
NCDIS-5517
ONKYO
P701a
P702a
U701

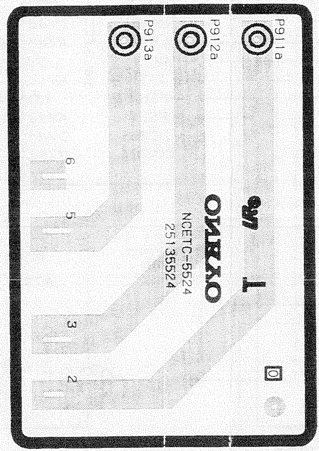
DISPLAY CIRCUIT PC BOARD


25135522
NCDG-5522
ONKYO
P301b
P302b
P303
P702b
Digital Signal Processor

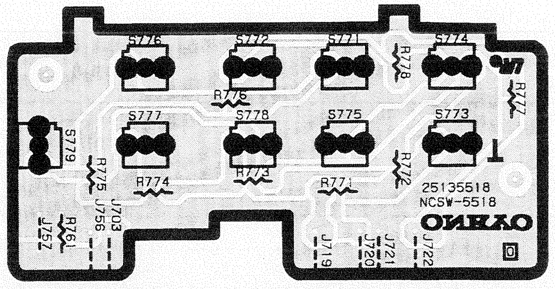
CD CIRCUIT PC BOARD


25135526
NCAF-5526
ONKYO
Q401
P401b
P402b
P403
P404

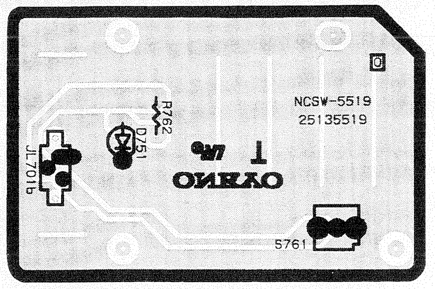
INPUT TERMINAL PC BOARD


NCETC-5524
25135524
ONKYO
P911a
P912a
P913a

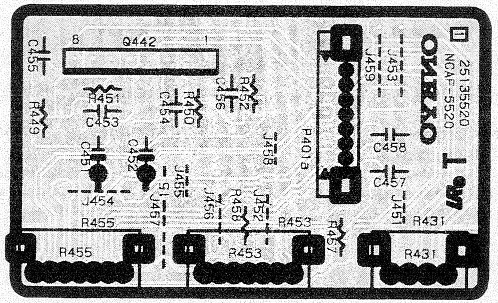
PRIMARY CIRCUIT PC BOARD


25135518
NCSW-5518
ONKYO

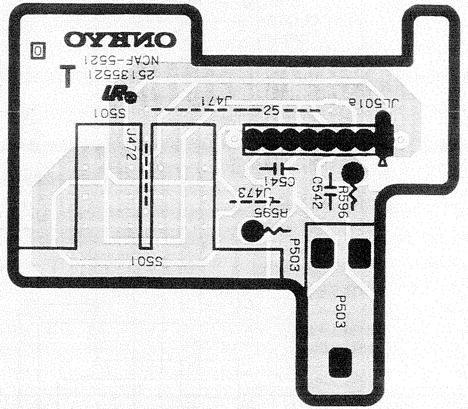
OPERATION SWITCH PC BOARD


NCSW-5519
25135519
ONKYO
S761

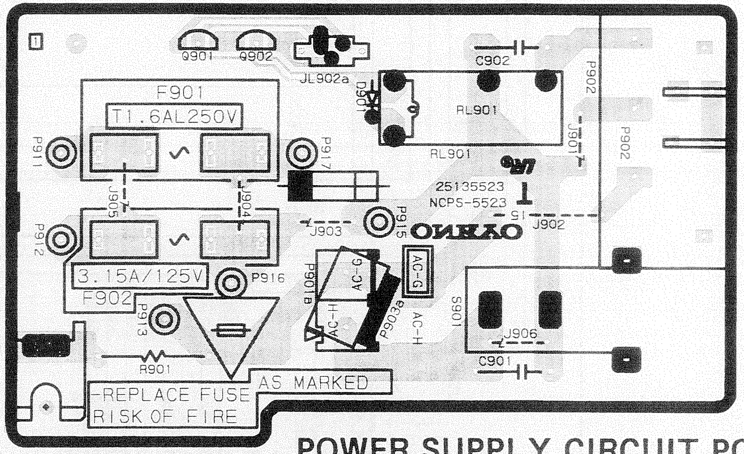
POWER SWITCH PC BOARD


25135520
NCAF-5520
ONKYO
Q442
P401a

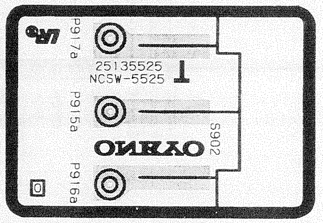
TONE CIRCUIT PC BOARD


ONKYO
NCAF-5521
25135521
P503

HEADPHONE TERMINAL PC BOARD


F901
T1.6AL250V
3.15A/125V
F902
RL901
25135523
NCPS-5523
ONKYO
AC-G
AC-H
REPLACE FUSE
AS MARKED
RISK OF FIRE

POWER SUPPLY CIRCUIT PC BOARD


25135525
NCSW-5525
ONKYO
P917a
P915a
P916a
S902

VOLTAGE SELECTOR SWITCH PC BOARD

PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-5513-1/1A)

CURCUIT NO.	PART NO.	DESCRIPTION
	Front end	
U001	240089	FE415-G11
	ICs	
Q103	22240890	LA1836
Q171	22240090	LM7001
Q185	22240679	μPC1346CS
Q481	22240239	TA7291S
Q911	222780125NEC	78M12HF
Q912	222780075MIT	M5F78M07L
Q913	222780565JRC	78M56
Q941	222951	M51943B
	Transistors	
Q101	2210746	2SC945A-P
Q102	2211723	2SC1923-O
Q104,Q173	2212115 or	2SC2458-GR or
	2213284	2SC1740S-R
Q172	2212445	2SK365-GR
Q174	2213510	DTA114ES
Q201,Q202	2212794	2SD1468-R
Q203	2213510	DTA114ES
Q482	2212115 or	2SC2458-GR or
	2213284	2SC1740S-R
Q491,Q492	2213631 or	RN1241-A or
	2213632	RN1241-B
Q493	2213510 or	DTA114ES or
	2214350	RN2202
Q501~Q504	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q505~Q508	2212115 or	2SC2458-GR or
Q515,Q516	2213284	2SC1740S-R
Q509~Q514	2211353 or	2SA949-O or
	2211354	2SA949-Y
Q517,Q518	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
Q519,Q520	2212115 or	2SC2458-GR or
	2213284	2SC1740S-R
Q521,Q522	2212653 or	2SC3421-O or
	2212654	2SC3421-Y
Q523,Q524	2212643 or	2SA1358-O or
	2212644	2SA1358-Y
Q525,Q526	2202923,	* 2SC5196-O,
	2202922,	* 2SC5196-R,
	2202373,	* 2SC4466-O,
	2202374 or	* 2SC4466-Y or
	2202375	* 2SC4466-P
Q527,Q528	2202913,	* 2SA1939-O,
	2202912,	* 2SA1933-R,
	2202363,	* 2SA1693-O,
	2202364 or	* 2SA1693-Y or
	2202365	* 2SA1693-P
	Transistors	
Q529,Q530	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q571	2212125 or	2SA1048-GR or
	2213354	2SA933S-R
Q572	2212115 or	2SC2458-GR or
Q581,Q582	2213284	2SC1740S-R
Q583	2211793 or	2SA992-E or
	2211792	2SA992-F
Q591	2213640 or	DTC123JS or
	2214660	RN1205
Q931	2211455	2SA1015-GR
	Diodes	
D101	224470753	MTZJ7.5C
D102	223205 or	1SS270A or
D171,D172	223163	1SS133
D174	224470823	MTZJ8.2C
D185	223205 or	1SS270A or
D571~D573	223163	1SS133
D581,D941	224470512	MTZJ5.1B
D591	223205 or	1SS270A or
	223163	1SS133
D911	22380022F or	RBV402 or
	22380271F	D3SBA20
D912,D913	224471203	MTZJ12C
D914~D916	22380035 or	GP104003E or
D931,D932	22380046	AM01Z
D933	224472704	MTZJ27D
D934	224470623	MTZJ6.2C
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5
X103	3010130	SFE10.7MZ2A
	Resonators	
X171	3010141	XTL-7.2M,Crystal
X185	3010203	AF6146CG,Crystal
X201	3010227	CSB456F15,Ceramic
	Transformers	
L101	233457	NFIF-4081
L102	233458	NFIF-4082
	Coils	
L103	233454K220	NCH-1452
L104	233383	NMC-6070
L201,L202	233355A	NMC-4059
L501,L502	231176S	S-1.3C
	Capacitors	
C001,C105	393341017	100μF,16V,Elect.
C106,C108	393341007	10μF,16V,Elect.
C110,C151	354780229	2.2μF,50V,Elect.
C111	374721224	1200pF±5%,50V,Plastic
C153	354744709	47μF,16V,Elect.
C154	354780109	1μF,50V,Elect.

CURCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C176,C195	354721019	100μF,6.3V,Elect.
C178	393341017	100μF,16V,Elect.
C179	374723334	0.033μF±5%,50V,Plastic
C180,C190	354780229	2.2μF,50V,Elect.
C181,C188	374722234	0.022μF±5%,50V,Plastic
C182	354782299	0.22μF,50V,Elect.
C187,C193	374724724	4700pF±5%,50V,Plastic
C189	374724734	0.047μF±5%,50V,Plastic
C191,C192	374723324	3300pF±5%,50V,Plastic
C201,C202	354780109	1μF,50V,Elect.
C203	354784799	0.47μF,50V,Elect.
C204	354780229	2.2μF,50V,Elect.
C207~C210	393341007	10μF,16V,Elect.
C213,C214	393341007	10μF,16V,Elect.
C215,C216	374721824	1800pF±5%,50V,Plastic <P>
	374722224	2200pF±5%,50V,Plastic <W>
C492	354721019	100μF,6.3V,Elect.
C493,C494	354780479	4.7μF,50V,Elect.
C501,C502	393341007	10μF,16V,Elect.
C511,C512	393322217	220μF,6.3V,Elect.
C521~C524	393381007	10μF,50V,Elect.
C525,C526	374724734	0.047μF±5%,50V,Plastic
C567,C568	393300107	1μF,160V,Elect.
C569,C570	393381017	100μF,50V,Elect.
C571	393341007	10μF,16V,Elect.
C572	393341017	100μF,16V,Elect.
C573,C574	393322217	220μF,6.3V,Elect.
C575	355742209	22μF,16V,Elect.
C581	354721019	100μF,6.3V,Elect.
C591	374721034	0.01μF±5%,50V,Plastic
C592	354742209	22μF,16V,Elect.
C911,C912	3504207	6800μF,50V,Elect.
C913,C914	393343317	330μF,16V,Elect.
C916,C918	393341007	10μF,16V,Elect.
C921	354764709	47μF,35V,Elect.
C922	354753329	3300μF,25V,Elect.
C924	393341007	10μF,16V,Elect.
C931	354761019	100μF,35V,Elect.
C932	393381017	100μF,50V,Elect.
C935	393381007	10μF,50V,Elect.
C941	354780109	1μF,50V,Elect.
C956,C957	374721044	0.1μF±5%,50V,Plastic
	Resistors	
R101	5210261	N06HR5KBC,Trim
R185	5210263	N06HR20KBC,Trim
R519~R522	443526804	68Ω ±5%,1/2W,Metal oxide
R523,R524	443525604	56Ω ±5%,1/2W,Metal oxide
R525,R526	443526804	68Ω ±5%,1/2W,Metal oxide
R531	5210259	N06HR2KBC,Trim
R537,R538	443528204	82Ω ±5%,1/2W,Metal oxide
CIRCUIT NO.	**PART NO.**	**DESCRIPTION**
	Resistors	
R539,R540	4500027	MPC708-2WK0.22,Metal plate
R545,R546	453630824	8.2Ω ±5%,1W,Metal
R569,R570	443522204	22Ω ±5%,1/2W,Metal oxide
R591	443628214	820Ω ±5%,1W,Metal oxide
R911~R914	443623314	330Ω ±5%,1W,Metal oxide
R915,R916	453530224	2.2Ω ±5%,1/2W,Metal
R917,R918	453534794	0.47Ω ±5%,1/2W,Metal
R919	453630394	3.9Ω ±5%,1W,Metal
R920	453630564	5.6Ω ±5%,1W,Metal
R931	443525604	56Ω ±5%,1/2W,Metal oxide
R933	443522204	22Ω ±5%,1/2W,Metal oxide
R937	453530474	4.7Ω ±5%,1/2W,Metal
R941	443521824	1.8kΩ ±5%,1/2W,Metal oxide
	Relay	
RL591	25065485	NRL-2P2A
	Terminals	
P505	25045330	NPJ-2PDBL184
P001	25060231	NTM-1PD153
P002	25060117	NTM-2PDML051
P501	25060125	NTM-8PDMN058
	Socket	
P701b	25051503, 25050965 or 25050857	NSCT-25P1290, NSCT-25P752 or NSCT-25P652
	Wire traps	
JL501b	25050272	NSCT-8P100
JL901b	25050273	NSCT-9P101
	Plugs	
P101,P185	25055038	NPLG-2P29
P301a	25055707	NPLG-11P663
P302a	25055701	NPLG-5P657
P402a	25055711	NPLG-15P667
P481a	25055708	NPLG-12P664
P521,P522	25055038	NPLG-2P29
	Radiators	
Q912a	27160211Y	RAD-68
Q913a	27160211-1Y	RAD-68B

VOLUME PC BOARD(NAETC-5514-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C481,C482	374724734	0.047μF±5%,50V,Plastic
C483,C484	374728214	820pF±5%,50V,Plastic
	Resistor	
R481,R482	5104364	N16RQL100KBT20F,Variable
	Socket	
P481b	25051237	NSCT-12P1027
	Push switch	
S481	25035609	NPS-122-L571

SECONDARY CIRCUIT PC BOARD (NAETC-5515-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
JL901a	25051113	NSCT-9P900,Wire holder

DISPLAY CIRCUIT PC BOARD(NADIS-5517-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q701	22240917	MPD78044AGF-142
	Fl tube	
Q702	212141	10-BT-167GK
	Transitors	
Q703	2212600	DTA124ES
Q704	221282	DTC144ES
Q705	2213750	DTA144ES
	Remote sensor	
U701	24130010	HC312
	Diodes	
D701~D705	223205 or 223163	1SS270A or 1SS133
D706	224470562	MTZJ5.6B
	Resonator	
X701	3010224	XTAL-4.19MHz,Crystal
	Capacitors	
C701,C711	353780229	2.2μF,50V,Elect.
C703,C710	353721019	100μF,6.3V,Elect.
C706	3000076	0.1F,5.5V,Super
	Holder	
Q702a	27190754B	FL
	Sockets	
P701a	25051523, 25050931 or 25050889	NSCT-25P1310, NSCT-25P718 or NSCT-25P684
P702a	25051515, 25050923 or 25050881	NSCT-17P1302, NSCT-17P710 or NSCT-17P676
	Wire holder	
JL701a	25051087	NSCT-3P874
	Push switches	
S701	25035652	NPS-111-S604
S709~S714	25035652	NPS-111-S604

OPERATION SWITCH PC BOARD(NASW-5518-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S771~S776	25035652	NPS-111-S604,Push switches
S777	25035652	NPS-111-S604,Push switch <P>
S778	25035652	NPS-111-S604,Push switch

POWER SWITCH PC BOARD (NASW-5519-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	L.E.D	
D751	225291D	SEL4910D-D
	Switch	
S761	25035652	⚠ NPS-111-S604
	Wire holder	
JL701b	25051087	NSCT-3P874

TONE CIRUCIT PC BOARD (NAAF-5520-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q442	22240293	NJM4558L-D
	Capacitors	
C457,C458	374721534T	0.015μF±5%,50V, Plastic
C451,C452	393341007T	10μF,16V, Elect.
C453,C454	374721534T	0.015μF±5%,50V, Plastic
	Resistors	
R431,R432	5104361	N11RGLC250KWT15Z,Variable
R453~R456	5104360	N14RGLC100KWT15Z,Variable
	Socket	
P401a	25051535	NSCT-7P1322

HEADPHONE TERMINAL PC BOARD(NAAF-5521-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R595,R596	443523914	390Ω ±5%,Metal oxide
	Push switch	
S501	25035517	NPS-222-L479
	Headphone jack	
P503	25045255	YKB21-5009
	Wire holder	
JL501a	25051112	NSCT-8P899

CD CIRCUIT PC BOARD (NADG-5522-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	22240487A	CXD2500BQ
Q302	22240726	SM5872CN
Q351,Q352	22240191	NJM4565D-D
	Transistors	
Q310	2211455	2SA1015-GR
Q305,Q307	2211504	2SA950-Y
Q311	2211504	2SA950-Y
Q304,Q306	221282	DTC144ES
Q308,Q309	221282	DTC144ES
Q353,Q354	221282	DTC144ES
	Diodes	
D302	22380035 or	GP104003E or
D302or	22380046	AM01Z
D303	223205 or	1SS270A or
D303or	223163	1SS133

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resonator	
X301	3010112	KD6586FFB,Crystal
	Capacitors	
C301	374724734	0.047µF±5%,50V, Plastic
C302	374721524	1500pF±5%,50V, Plastic
C303,C304	374721034	0.01µF±5%,50V, Plastic
C310,C314	393321017	100µF,6.3V, Elect.
C311,C315	374721034	0.01µF±5%,50V, Plastic
C312,C316	393324717	470µF,6.3V, Elect.
C317,C321	393321017	100µF,6.3V, Elect.
C319	393341017	100µF,16V, Elect.
C323,C324	393322217	220µF,6.3V, Elect.
C357,C358	374721824	1800pF±5%,50V, Plastic
C359,C360	374724724	4700pF±5%,50V, Plastic
C363,C364	393382207	22µF,50V, Elect.
C365,C366	393342217	220µF,16V, Elect.
	Sockets	
P303	25051500, 25050962 or 25050854	NSCT-22P1287, NSCT-22P749 or NSCT-22P649
P702	25051495, 25050957 or 25050849	NSCT-17P1282, NSCT-17P744 or NSCT-17P644
P301b	25051236	NSCT-11P1026
P302b	25051230	NSCT-5P1020

POWER SUPPLY CIRCUIT PC BOARD(NAPS-5523-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500191	⚠ DE7150F103M,Capcitor IS
S901	25035550	⚠ NPS-111-L512,Push switch
P901a	25055713	NPLG-2P669,Plug
F901a	25050065	⚠ YSH403T,Fuseholder
F902a	25050065	⚠ YSH403T,Fuseholder
F901	252073	⚠ 1.6A-SE-EAK,Fuse
F902	252150	⚠ 3.15A-TSC,Fuse <W>

VOLTAGE SELECTOR SWITCH PC BOARD (NASW-5525-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
S902	25065437	⚠ NSS-22157P,Slide switch

INPUT TERMINAL PC BOARD (NAAF-5526-1)

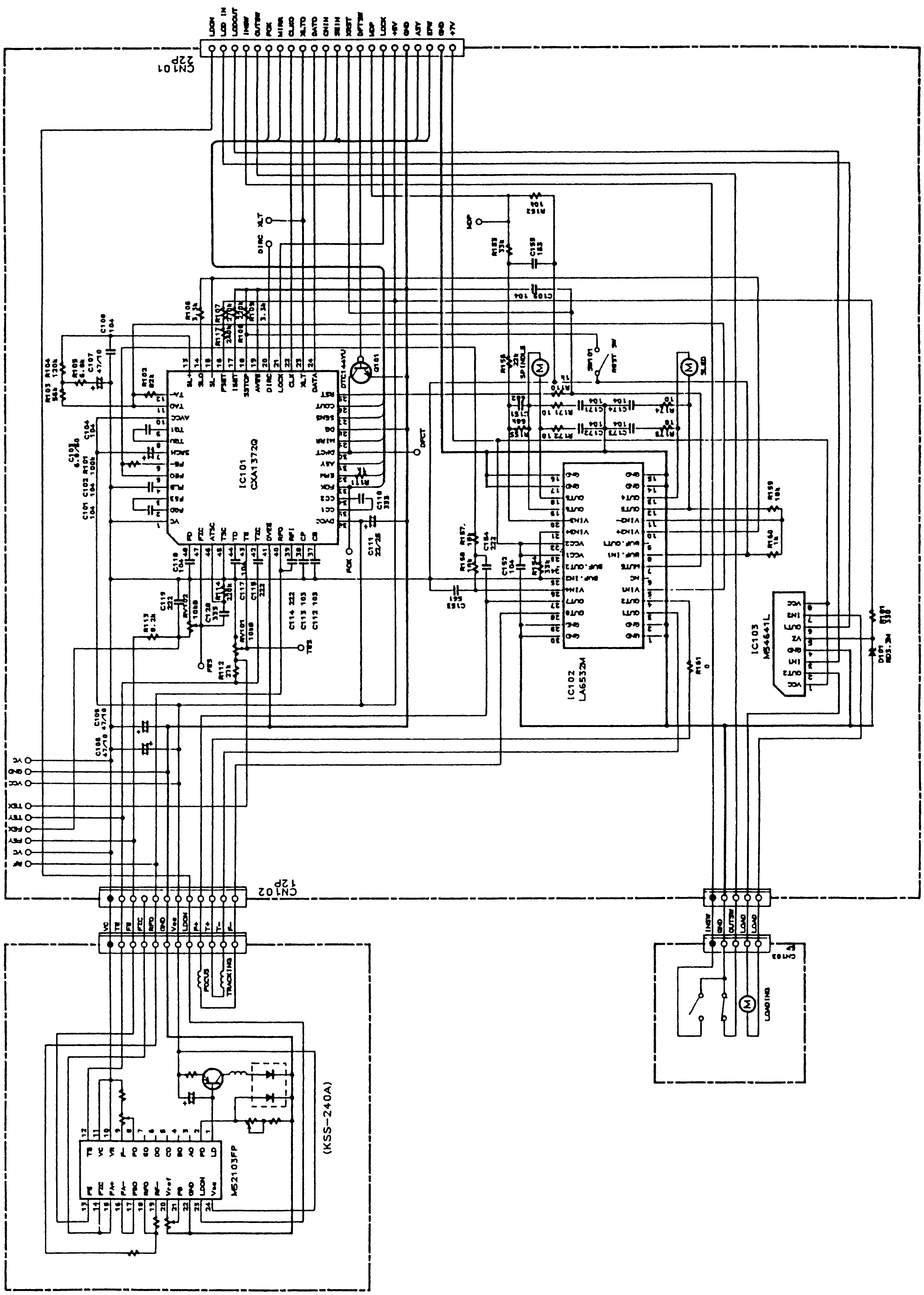
CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401	22240800	TC9164AN
Q441,Q442	22240293	NJM4558L-D
	Capacitors	
C447,C448	393344707	47µF,16V, Elect.
C449~C452	393341007	10µF,16V, Elect.
C465,C466	393341007	10µF,16V, Elect.
	Plug	
P401b	25055813	NPLG-7P769
	Socket	
P402b	25051240	NSCT-15P1030
	Terminals	
P403	25045303	NPJ-4PDBL162
P404	25045300	NPJ-6PDBL159

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

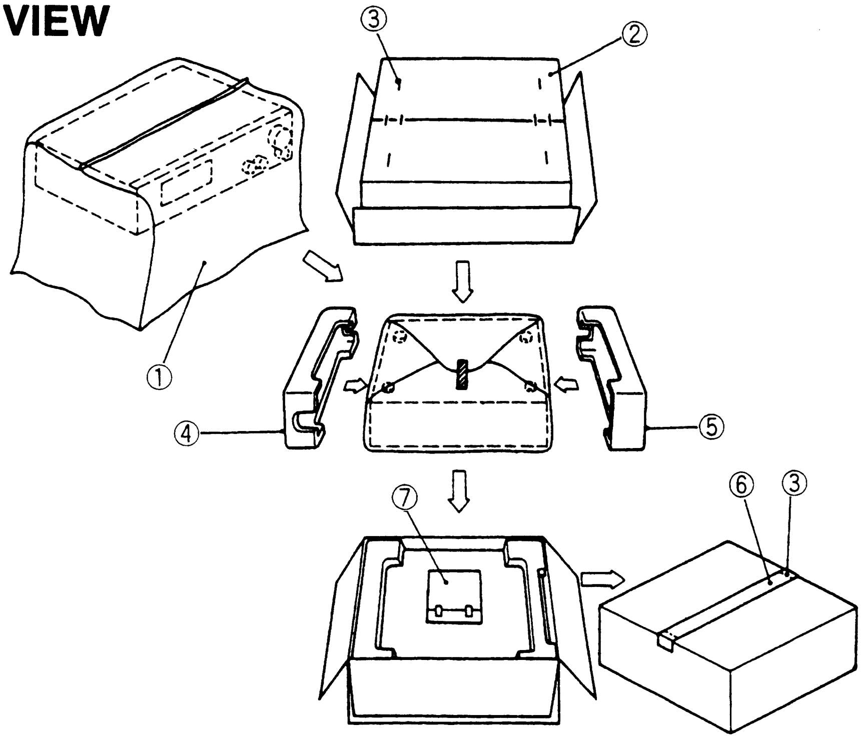
CAUTION:Replacement of the transistor of mark *, if necessary, must be made from the same beta group (Hrz) as the original type.

SCHEMATIC DIAGRAM

—CD section—


CN101
22P
CN102
12P
CN103
IC101
CXA1372Q
IC102
LA6532M
IC103
M54641L
Q101
DTC144VU
SPINDLE
SLED
LOADING
FOCUS
TRACKING
M52103FP
(KSS-240A)
DIRC
XLT
MDP
FOK
DFCT
FE3
TE3
LDON
LDO IN
LDOOUT
INSW
OUTSW
MIRR
CLKO
XLTO
DATO
CNIN
SEIN
XRST
DFTSW
LOCK
+8V
GND
ASY
EFM
+7V
VC
TE
FE
FZC
RFO
Vee
F+
T+
T-
F-
LOAD

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29100105	680×550,Styren bag
2	29052907	Carton box <B>
	29052906	Carton box <S>
3	282301	Staple
4	29091700	Pad F
5	29091701	Pad B
6	29110071	PP tape
	29100097-1Y	350×250,Styren bag
	2010200	Cord RI
	25055040	CV-K-2,Conversion plug <W>
	292112Y	FM antenna
	29342178	Instruction manual, English
	29342179	Instruction manual U6 <P>
	29342180	Instruction manual U3
	29342182	Instruction manual U3 <W>
	29355133A	Instruction sheet
	29361731A	Label
	29361574	Label
	29360687	Label, Class 1
	24140302	RC-302S, Remote control transmitter
	29095746	Sheet
	29095745A	Sheet U7 <P>
	3010054	UM-3, Battery
	25065462	YA21-0237, FM adaptor <W>

NOTE: <P>:230V model only
<W>:Worldwide model only
<S>:Silver model only
<B>:Black model only

ONKYO CORPORATION

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Part No. 0M3521 NS509